The Iron Age

A Review of the Hardware and Metal Trades.

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Tunner's Converting Furnace.

The making of steel by the process of cementation consists essentially in this: wrought iron, surrounded with charcoal powder, is exposed in fire proof chests to a continued glowing heat. The temperature necessary is a bright red heat, at which copper begins to melt (2144° F., according to Plattner); at a lower temperature cementation proceeds only slowly, and finally not at all, while at a higher one pig iron is produced. The question as to the manner in which the carbonization takes place, and especially in what form carbon acts on the wrought iron, has been discussed considerably, without having, as yet, been answered. According to the opinion most generally current, carbonization may take place in different ways, and the gaseous hydrocarbons take the principal part, while the action of the solid carbon can only be of secondary importance.

With regard to the furnaces, metallurgists distinguish between furnaces with one, two, and three chests, of which those with two chests are used for working on a large, and those with one chest for working on a small, scale. Those with three chests were first introduced in Sweden by Rinmann, but although they require less fuel, they have again been abandoned because no uniform heat product could be obtained.

Our illustrations represent a converting furnace lately built at Loben, Styria, on Tunner's plan.

Fig. 1 represents a longitudinal section according to A B (Fig. 3), Fig. 2 represents a cross-section according to C D (Fig. 4), Fig. 3 half of the horizontal section E E (Fig. 1), Fig. 4 half of the horizontal section G H (Fig. 2). It is calculated for a charge of from 250 to 300 cwt. wrought iron, and possesses a grate with steps for the use of brown coal or lignite. At the same time it is indicated in Fig. 1 by dotted lines what position is to be given to a horizontal grate *r* and to a fire-door *s*, if the ordinary fire-grate is to be used.

K K are two chests intended to hold the wrought iron bars and the cementing powder. They consist of fire-proof stones, sandstone slabs or fire-brick plates (as in the furnace illustrated), carefully joined and cemented with clay-mortar, the joints being protected as well as possible by the pillars placed at the bottom and on the sides, between which the fire passes. The most simple construction is that with fire-bricks, such as is usual in Westphalia. The dimensions of the chests vary according to the charge, which may be from 100 to 500 cwt., yet it usually does not exceed 300 cwt. for each furnace, even in large establishments. The chests are from 8 to 15 feet long, from 26 to 36 inches wide and from 28 to 36 inches high; the length being proportioned to the breadth so that the inner furnace space in the horizontal section represents nearly a square. Between the two chests is the arched fire-place J with the ash-pit L. In the construction as represented, there is on each side of the furnace a grate with steps V of a breadth from 12 to 18 inches; fed with fuel from a funnel-shaped coal space *b* (Fig. 1), which is to be kept filled, and from which through a four inch wide slit it uniformly rolls down. In order to prevent a widening of the latter by burning out, one of its sides is bordered by a square hollow cast iron tube *d*, which on one side is connected with the open air channel *e*, on the other with sheet iron pipe *f* and is thus cooled by a current of air.

If, as it is generally the case, a horizontal fire-grate is used, it extends (as indicated by the dotted lines in Fig. 1) through the whole length of the furnace, *h* being then a center wall, serving either as support for grate, *r*, or sometimes extending to the arch, dividing thus the fire-space in two separated halves. By using horizontal grates the stoke-hole, with the closing door, *s*, has to be laid deeper than the bottom of the boxes, whereby the space, situated below the bottom stone, also attains another position, namely, that of line, *m*, *m* (Fig. 1). In any case, it is of importance to construct the furnace in such a manner that the poking of the fire, as well as the charging and discharging of the chests, can be accomplished as readily as possible.

In order that the flame may be properly divided, part of it passes through the lateral openings, *n*, and at first toward the bottom flues, *t*, thence through the lateral flues, *l*, toward the broadsides, as well as through the longitudinal flues, *p* and *o*, to the end sides of the chests. Another part passes through the upper openings, *o*, to the center flues, *u*. The draft being strongest in this direction, it must be somewhat moderated by partly or wholly covering some center flues with fire-proof tiles at the level of chest edge; beside, it is proper to construct the upper openings, *o*, in the furnace arch more narrow than the lateral ones. In England it is usual not to overarch the fire place by a continuous vault provided with openings, but with single ribs, on which the intermediate piers walling with a rubble walling with circular cross section, which gradually lightens down in order to end in a short flue, whereby the exterior of the furnace attains the form of a conically ascending tower of about 40 feet hight. The lower space between the outer and inner walls is then filled in with ordinary walling to the point where the vault commences that arches over the converting chests. This manner of construction, though requiring a larger base and more building material, insures great solidity.

Converting furnaces with one chest are, for instance, in use in Hirschwang, near Reichenan, at

Fig. 1.

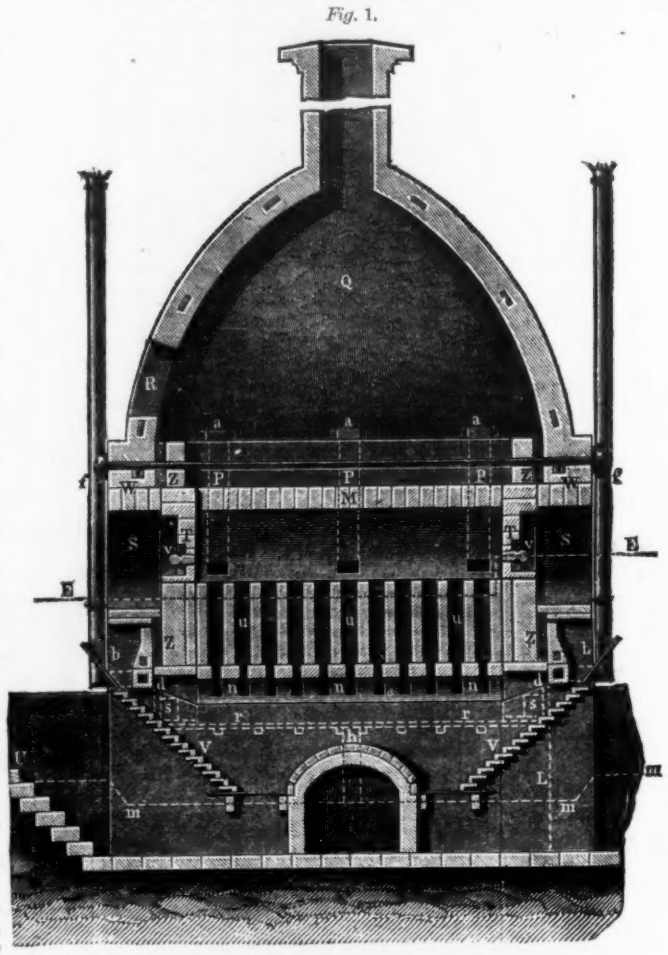


Fig. 2.

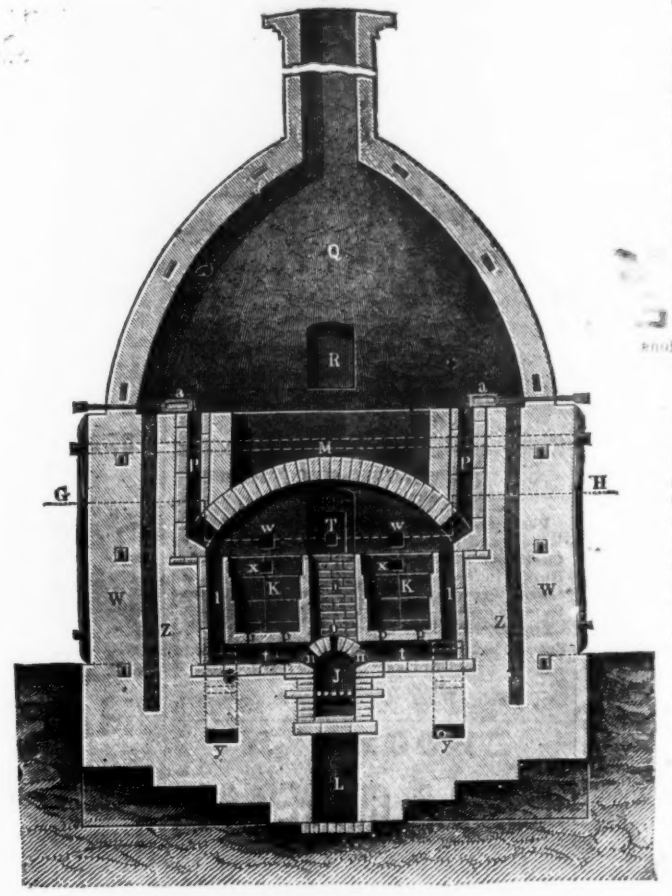


Fig. 3.

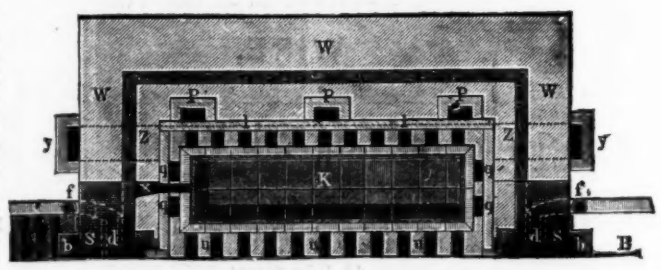
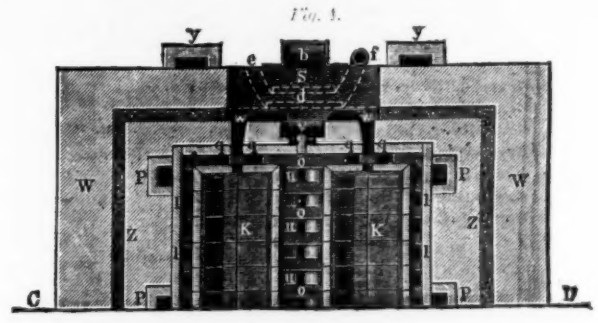


Fig. 4.



TUNNER'S CONVERTING FURNACE.

Leoben, and at Friedrichsthal, in Wurtemberg. In the first named place, Rittinger has constructed an apparatus for burning wood, whereby the fire enters by way of various channels and flows around by way of side and bottom-flues, in order to pass to a smoke-pipe situated below the furnace, which is connected with a flue serving for two converting furnaces. The vault of the furnace is low and movable, being formed with several fire-proof tiles, set up like a roof, which are covered with dust of fire-brick and sand. When the "brand" is completed, this vault can readily be taken down, the furnace will cool more rapidly, and the charging and discharging of the chests can be accomplished more readily.

Southwestern Pennsylvania.

The Pittsburgh Evening *Chronicle* says: Considerable activity prevails in opening avenues of trade through this long neglected portion of our State, so richly endowed by natural resources. No less than four different routes of intercommunication are either built or under process of construction. The Southwestern Pennsylvania Railroad, extending from Greensburg to Connellsville, Uniontown and the Monongahela Valley, is opened for travel some seventeen miles from the former place, and during the coming summer the Youghiogheny River will be bridged, and the iron and coal works around Uniontown will be reached. A large portion of the grading west of Uniontown is finished and awaiting the track layers. The through line of the Pittsburgh and Connellsville Railroad has more trade than it can well accommodate, and double tracks between this city and Confluence are imperatively called for. Numerous branch lines are already made, reached, if the financial resources are sufficient, and, lastly, Congress has made a handsome appropriation of seventy-five thousand dollars, to extend the slackwater improvement of the Monongahela River from the State line to Fairmount, on the Baltimore and Ohio Railroad. Some three dams are needed to effect this object, which will cost something over two hundred thousand dollars.

It is manifest, looking at the immense natural resources stored up in this corner of our State, and the great development of the coal and iron industries, that all these lines of traffic will find abundant employment. In fact, it might be said, that for the future it will be one of the great duties to provide subsidiary lines as feeders to the main roads, and in this regard we would remind those having these interests at heart that they should remember the manifest usefulness of narrow gauge railroads for this purpose. These roads can be built for about one-half of what railroads of the standard gauge cost, and their operating expenses are similarly favorable.

There is room for at least five hundred miles of such cheap roads in the district under notice; the coking business alone would justify their construction, whilst the manufacture of iron, considering the high price ruling in England, altogether depends on cheap means of transportation for ore, limestone and coal.

The doom of bronze, as a material for rifled guns, has, says the London *Daily News*, been sealed. The manufacture of 7-pounders in that metal for mountain and boat service has been now given up, and orders have been issued for the construction of steel 7-pounders instead. The failure of bronze has been a great disappointment to its advocates, who only a few years ago were full of confidence in the perfection of their favorite material.

Defects in our Patent System.

In the course of an interesting paper on "Modern Alchemists," lately read before the Polytechnic Branch of the American Institute, by Dr. Adolph Ott, we find the following, which merits consideration:

I need scarcely inform you that Patent Office records abound in patents granted for alleged inventions, as those spoken of. Mr. Chairman and gentlemen, allow me now to devote a short time only to the answering of the question, "Is the easy granting of letters patent, as now practiced in the Patent Office, an evil or not?"

The late Patent Commissioner, Mr. S. S. Fisher, now in Cincinnati, in an address delivered at the thirty-eighth annual exhibition of this institute said: "I am asked what proportion of all patented inventions prove to be valuable to their projectors, as well as to the public? One-tenth! Probably not much more than that; but, let it be remembered, there are few failures so harmless as that of a useless invention. The patent gives it a chance to prove itself worthy to the public patronage. It simply declares that if it be good it shall not be stolen, but if it be useless nobody will want to steal it."

I beg to dissent from this opinion of the worthy ex-commissioner on the ground that during a residence of about ten years in this metropolis, I have had more opportunities to observe the practical working of the patent system than Mr. Fisher possibly could have obtained in a Western city, whence he took charge of that responsible position. As the patent laws are now executed, I venture to say that they encourage a host of persons, lacking the most elementary knowledge in chemistry and physics, to devote their time and means to dabbling in experiments, which necessarily must remain fruitless to the world at large. And even if the results of those experiments find application, it can only be ephemeral. They will in the end only benefit the inventor, not the public.

To these modern adepts, to whom chemistry is a mystery surrounded by Egyptian darkness, the words of Pastor Bezzel, though written in 1700, still apply:

Wer im gemeinen Dienst dem Staat nichts nützen kann,
Wer jung als Passagier, sein Flab und Gut verthan,
Will nun im Mussiggang, aus Glasern, Rauch und Kohlen
(Schaut doch dies Wunderwerk) des Schaden's sich erholen.

I continue, the patent laws, as now executed, yield to those dabblers the means to follow their chosen avocation, whenever they are able to inveigle capitalists into their schemes. Hence they are a means to defraud people, while they are injurious to meritorious, but modest, inventors; and, finally, they are highly detrimental to the members of the chemical profession, by placing them into a disreputable light in the opinion of persons knowing of the failures of so many "chemical inventions," with which this country has been flooded.

Two large bridges are now in course of construction on the line of the Cairo and Fulton Railroad, across the White and Arkansas rivers. The bridge across the White River, at Prospect Bluff, will consist of a draw of two spans 125 feet clear each, and two fixed spans 175 feet each, making, with the approaches and width of piers included, the total length of the bridge 631 feet. The bridge is what is known as the combination truss, resting upon piers of solid masonry. The superstructure is all completed, ready for erection the moment the piers, which are now above the water, are finished. The bridge over the Arkansas River, at Little Rock, is to be 901 feet in length, the railroad track 42 feet from the water, and 25 feet above this, carriage and footways, making the total hight of structure 67 feet above low water mark. There will be a draw, swung at the center, giving two openings, each 150 feet in the clear, and three fixed spans of 190 feet each. The draw will be all iron. The other combination truss spans are of timber, the wood being burnettized. The other spans will be combination truss and of timber, with iron stays, bolts and braces. It will rest upon hollow iron columns, filled with concrete, which rest on the rock, 42 feet below the bed of the river.

The Cincinnati Iron Bridge Works have just closed a contract with the city of Elmira, New York, for an eight hundred feet Whipple bridge across the Chemung river. The contract price of the bridge is $80,000.

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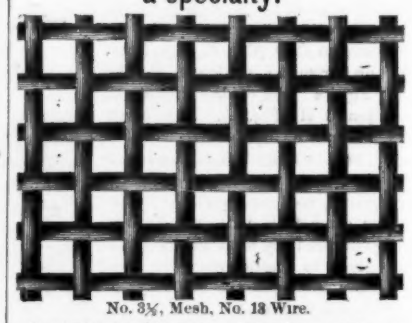
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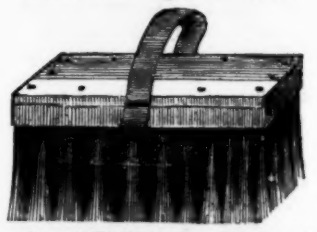
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No of Wire	Wt. per sq. foot	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.
10	3.47	40	11	3.20	38	12	2.80	35	14	2.43	33	16	2.00	30	18	1.39	30
11	2.75	32	12	2.45	31	13	2.15	30	15	1.97	30	17	1.47	25	19	1.08	25
12	2.10	26	13	1.85	25	14	1.62	25	16	1.51	25	18	1.11	20	20	0.76	20
13	1.61	22	14	1.41	20	15	1.31	21	17	1.10	20	19	0.85	18			

These Cloths are used for Mines, Jail, Asylum, and Storehouse Window and Door Guards, Malt Floors, Bulkheads and Floors for Grain Elevators and Grain Vessels. SPECIAL FIGURES FOR LARGE ORDERS.

"Mettallum Martis."

In 1665 the following quaint work was published in England by Dud Dudley. The only perfect original copy known to exist is preserved in the British Museum, and upon the fly leaf is written, probably by Sir John Pettus, Knight of Suffolk, "1000 were paid for, seller cheated of main, by Ironmasters." The work possesses much historical and literary interest, and will be read with appreciation by the iron makers of the United States:

DUD DUDLEY'S "METTALLUM MARTIS."

That *Great Brittain* with her Men of Warr, Fleets and Shiping, have had in all Ages, and in these laiter Ages, as great Success at Seas as any people whatsoever in the Universe, cannot modestly be denied in 88, overthrowing that Invincible Armado so long a preparing, and since other Navies also; and whose Armadoes, Navies, Armes, and Men, have been a Terrour to other Nations; nay her own Grand Magazins, are the very Granary from whence all His Sacred Majesties Kingdomes, Dominions, and Territories both in the *East* and *West-Indies*, on this side and beyond the Line, they have their whole and thorow supply of Shiping, Men, Armes, Food and Rayment, and more then can be, from any Kingdom of the Christian World.

Now if Wood and Timber should decay still, and fail, the greatest Strength of *Great Brittain*, her Ships, Mariners, Merchants, Fishings, and his Majesties Navies, and Men of War, for our Defence, and Offence would fail us, which before, and since 88 made his Sacred Majestyes Prodecessors, Queen *Elizabeth*, and her Great Council, the then Parliament, to make Lawes for the preservation of *Wood* and *Timber*, especially near any Navigagable River; 1 *Eliz.* 15. 27 *Eliz.* 19. 28 *Eliz.* 3. 5. 23 *Eliz.* 5. All which Laws, and others, for the Preservation of Wood and Timber are still in force, but not duly Executed; also King *James* His Sacred Majesties Grand-father, and *Prince Henry* for the Preservation of Wood and Timber in this Island, did in the *9th* Year of His Reign, Grant His Letters Pattents or Priviledge unto *Simon Sturtevant*, Esq.; for 31 years, for the making of Iron with Pit-cole and Sea-cole for the preservation of Wood and Timber of *Great Brittain* so greatly then consumed by Iron-works. This Invention was by King *James's* command to be at large put in Print, which Book did contain near a quire of paper in quarto, called, *Simon Sturtevant* His *Metallica*. *Anno.* 1612. *May* 22. Printed by *George Eld, Cum Privilegio.*

After *Simon Sturtevant* could not perform his making of Iron with Pit-cole or Sea-cole, according unto his Engagement, King *James*, and Prince *Henry*, caused him to render up his Pattent, and a new Pattent was Granted unto *John Rovenson*, Esq. who also was Enjoyned to write a Book of his Inventions, called *Rovenson's Metallica.* Printed for *Thomas Thorp, Cum Privilegio: May* 15. *An.* 1613.

After *John Rovenson*, Esq. had often failed with his Inventions, and great undertakings, *Gombleton*, Esq. a Servant of Queen *Ann's*, undertook (by Pattent) to perform the Invention of making of Iron with Pit-cole, and Sea-cole; but he being as confident of his Invention as others, did Erect his works at *Lambeth*, which the Author view'd; and *Gumbleton* failing, the Learned and Ingenious Doctor *Iordon* of *Baths*, the Author's Acquaintance, and sundry others obtained Pattents for the making of Iron, and melting of Mines with Pit-cole and Sea-cole, for the preservation of Wood and Timber all which Inventions and endeavors to Effect and Perfect the said Works, have been by many heretofore well known, to have worthily attempted the said Invention, though with fruitless success.

Having seen many of their failings, I held it my Duty to endeavour, if it were possible to Effect and Perfect so laudable, and beneficial, and also so much desired Inventions, as the making of Iron into cast Works and Bars; and also the Melting, Extracting, Refining and Reducing all sorts of Mines, Minerals and Metals, with Pit-cole, Sea-cole, Peat, and Turf, for the preservation of wood and timber, so much exhausted by Iron Works of late.

Having former knowledge and delight in Iron Works of my Fathers, when I was but a Youth; afterwards at 20 years Old, was I fetched from *Oxford*, then of *Bayliol* Colledge, *Anno* 1619, to look and manage 3 Iron Works of my Fathers, 1 Furnace, and 2 Forges, in the Chase of *Pensnet*, in *Worcester-shire*, but Wood and Charcole, growing then scant, and Pit-coles, in great quantities abounding near the Furnace, did induce me to alter my Furnace, and to attempt by my new Invention, the making of Iron with Pit-cole, assuring my self in my Invention, the loss to me could not be greater then others, nor so great, although my success should prove fruitless; But I found such success at first tryal animated me, for at my tryal or blast, I made Iron to profit with Pit-cole, and found *Facere est addere Inventioni.*

After I had made a second blast and tryal, the feasibility of making Iron with Pit-cole and Sea-cole, I found by my new Invention, the quality to be good and profitable, but the quantity did not exceed above 3 Tuns *per* week: After I had brought my Invention unto some perfection, and profitable, doubted not in the future to have advanced my Invention, to make quantity also.

Immediately after my second tryal, I wrote unto my Father what I had done, and withall, desired him to obtain a Pattent for it from King *James* of Blessed Memory; the Answer to which Letter I shall insert, only to show the forwardness of King *James*, in this his much animating the Inventor, as he did both *Simon Sturtevant*, *John Rovenson*, Doctor *Iordanic* and others; the Letter follows;

Son *Dudley*,

The Kings Majesty being at New-Market, *I sent* Parkes *thither on Saturday to some Friends of mine, to move the Kings Majesty for my Pattent, which be coming on Sunday Morning, in the Afternoon His Majesty sent a Warrant to Master Atturney to dispatch my Pattent, for the which I am infinitely bound unto His Majesty, that it pleased Him of His Great Grace and Favour to dispatch it so soon; I have been this night with Master Atturney, who will make hast for me; God Bless you, and Commend me unto all my Friends:*

March 10. Your Loving Father,
1619. Edward Dudley.

This *Richard Parkes*, a Parks-house Esq; in the Letter before mentioned, was the Authors Brother in Law, which did about 1 year after the *Pattent* was granted, carry for the Author much good Merchantable Iron unto the *Tower*, by King *James's* command to be tryed by all Artists, and they did very well approve of the Iron, and the said *Parkshouse* had a fowling Gun there made of Pit-cole Iron, with his name gilt upon the Gun, which Gun was taken from him by Colonel *Levison* Governor of *Dudley* Castle, and never restored.

The said *Richard Parkhouse's* son my Nephew, *Edward Parkshouse*, the 5th. of *Januaay* 1664, pressed me much to put Pen unto Paper, to shew what I have done in the invention of making of Iron with Pitcoale and Seacoal, not unknown unto this Country, and to my brother *Foltiott*, Esq; and my Nephew *Parkshouse*, Esq; and to my Kinsman Master *Francis Dingly*, to whom I intend to leave the Secrets of my Inventions, notwithstanding all my sad sufferings from time to time this forty Years in the invention, my Sufferings in the War, and my Estate sold for my Loyalty; and also my sad sufferings and obstructions since his Sacred Majesties happy Restauration many wayes; and also upon sundry and many references, at the Authors very great charge, pains, and time spent of Foure years in his aged dayes, for the general good, by his inventions for the preservation of Great *Brittain's* Wood and Timber.

Now let me shew some Reasons that induced me to undertake these inventions, after the many failings of others, well knowing that withing Ten miles of *Dudley* Castle there to be neer 20000. Smiths of all sorts, and many Iron works at that time, within that Circle decayed for want of Wood (yet formerly a mighty Woodland Country.)

Secondly, The Lord *Dudley's* Woods and Works decayed, but Pitcoal and Iron, Stone or Mines abounding, upon his Lands, but of little Use.

Thirdly, Because most of the Coale Mines in these parts, as well as upon the Lord *Dudley's* lands, are Coals, Ten, Eleven, and Twelve yards thick; the top or the uppermost Cole, or vein, gotten upon the superficies of this Globe or Earth, in open works.

Fourthly, Under this great thickness of Coal, is very many sorts of Iron, Stone, Mines, in the Earth Clay or Stone earth, like bats in all four yards thick; also under these Iron mines is several yards thick of Coals, but of these in an other place more convenient.

Fifthly, Knowing that when the Colliers are forced to sinck Pits for getting of ten yards thick of Cole one third Part of the Coles or more, that be gotten under the ground, being small are of little or of no use in that inland Country nor is it worth the drawing out of the Pits, unlesse it might be made use of by making of Iron therewith into cast works or Bars.

Sixthly, Then knowing that if there could be any use made of the smal-coale that are of little Use, then would they be drawn out of the Pits, which coles produceth often times great prejudice unto the Owners of the works and the work it self, and also unto the Colliers, who casting of the smalcoles together, which compelling necessity enforcing the Colliers so to do, for two causes; one is to raise them to cut down the ten yards thicknesse of coles drawing onely the bigger sort of cole, not regarding the lesser or small cole, which will bring no money; saying, *He that liveth longest let him fetch fire further:* Next, These Colliers must cast these coles, and sleck or drosse out of their wayes, which sulphurious small cole and crouded moyst sleck heat naturally, and kindles in the middle of those great heaps; often fals the cole-works on Fire, and flaming out of the Pits, and continue burning like Ætna in Cicily, or Hecla in the Indies.

Yet when these loose Sulphurious compost of cole and sleck, being consumed in processe of time, the Fire decayes, yet notwithstanding the Fire hath continued in some Pits many years; yet colliers have gotten coles again, in those same Pits, the Fire not penitrating the solid and firme wall of coles, because Pabulum ignis est Aer, the Ayre could not penetrate, but passe by it in the loose cole and sleck; for comming into those pits afterwards, I have beheld the very blows of Pikes or tools that got the coles there formerly. Also from these Sulphurious heaps, mixed with Iron, Stone (for out of many of the same pits is gotten much Iron, Stone, Mines; the Fires heating vast quantities of Water, passing thorow these Soughs or Adits, becometh as hot as the Bath at Bathe, and more healing and sovereign even for old Ulcers and Sores; because many of these Baths doe proceed not onely from common Sulphur and vitriol of Mars, but also from Solar sulphur in this Iron stone; I hope, Filii Artis, will excuse my digesion from the making of Iron with Pit cole, Seacole, Peat or Turff, and the melting of mines and mettals and refining of the same, with the like fuell; the first Pattent being granted by King Iames for 31, Years in the 19th year of his Reign upon just and true information, that the Arthour had the year before made many Tuns of Iron with Pitcole at a Furnace or Ironwork, in the Chase of Pensnett, in the County of Worcester, besides cast Iron Works of sundry sorts with Pitcoles; and also at two Forges or Iron Mills, called Cradly Forges, find the said Iron into Merchantable good Bar Iron; But the year following, the grant or Patent for making of Iron with Pitcole or Seacole. There was so great a Flood, by rain, to this day, called the great May-day-Flood, that it not onely ruinated the Authours Iron works, and inventions; but also many other mens Iron works: and at a market Town called Sturbridge in Commitate Wigorniæ, although the Authour sent with speed to preserve the people from drowning; one resolute man was carried from the Bridge there in the day time, and the nether part of the Town was so deep in Water that the people had much ado to preserve their lives in the uppermost rooms in their Houses.

My Yron works and inventions thus demolshed, to the joy of many Iron maters, whose, works scaped the Flood and who had often disparaged the Authours Inventions, because the Authour sold good Iron cheaper then they could afford it; and which induced many of the Iron masters to complain unto King Iames, averring, that the iron was not Merchantable; As soon as the Authour had repaired his works and inventions (to his no small charge) they so far prevailed with King Iames, that the Authour was commanded with all speed possible, to send all sorts of Bar iron up to the Tower of London, fit for making of Musquets, Carbines and Iron for great Bolts, fit for Shipping, which Iron being so tryed by Artists and Smiths, that the iron masters and Iron-mongers were all silenced until 21th of King James: At the then Parliament, all Monopolies were made Null, and diverse of the Iron-masters endeavouring to bring the invention of making Iron with Pitcole, Seacole, Heat and Turff, within the compasse of a Monopoly; but the Lord Dudley and the Authour did prevaile; yet the Pattent was limited to continue but Fourteen years; after which Act the Authour went on with his invention cheerfully, and made annually great store of Iron, good and merchantable, and sold it unto diverse men yet living at Twelve pounds per Tun; I also made all sorts of cast iron Wares, as Brewing-Cisterns, Pots, Morters, and better and cheaper than any yet were made in these Nations, with Charcoles; Some of which are extant to be seen by any man (at the Authours House in the City of Worcester) that desire to be satisfied of the truth in the Invention.

Afterwards, the Author was outed of his works and inventions before mentioned by the Iron-masters and others wrongfully, over long to relate: yet being unwilling his Inventions (having undergone much charge and pains therein) should fall to the ground, and be buried in him, made him to set forward his Invention again, at a Furnace called, Himley Furnace in the County of Stafford, where he made much Iron with Pit-cole, but wanting a Forge to make it into bars, was constrained for want of Stock to sell the Pig-Iron unto the Charcole Iron-masters, who did him much prejudice, not onely in detaining his stock, but also disparging the Iron: Himley Furnace being Rented out unto Charcole Iron-Masters.

The Authour Erected a new large Furnace on purpose, 27 foot square, all of stone for his new Invention, at a place called, Hasco Bridge, in the parish of Sedgley, and County of Stafford; the Bellows of which Furnace were larger than ordinary Bellows are, in which work he made 7 Tuns of Iron per week, the greatest quantity of Pit-cole Iron that ever yet was made in Great Brittain; near which Furnace, the Author discovered many new Cole-mines 10 yards thick, and Iron-Mine under it, according to other Cole works; which Cole-works being brought unto perfection, the Author was by force thrown out of them, and the Bellows of his new Furnace and Invention, by riotous persons cut in pieces, to his no small prejudice, and loss of his Invention of making of Iron with Pit-cole, Sea-cole, &c. So that being with Law-Suites, and Riots, wearied and disabled to prosecute his Art and Invention at present, even until the first Pattent was extinct: Notwithstanding the Author his sad Sufferings, Imprisonments wrongfully for several thousand pound in the Counter in London, yet did obtaine a new Pattent, dated the 2*d* of May, Anno 14. Caroli Primi of ever Blessed Memory, not only for the making of Iron into cast-works, and bars, but also for the Melting, Extracting, Refining and Reducing of all Mines, Minerals and Mettals, with Pit-cole, Sea-cole, Peat, and Turf, for the Preservation of Wood and Timber of this Island; into which Pattent, the Author, for the better support and management of his Invention, so much opposed formerly at the Court, at the Parliament, and at the Law, took in David Ramsey, Esquire, Resident at the Court; Sir George Horsey, at the Parliament; Roger Foulke, Esquire, a Counsellour of the Temple, and an Ingenious Man; and also an Iron Master, my Neighbour, and one who did well know my former Sufferings, and what I had done in the Invention of making of Iron with Pit-cole, &c.

All which said Patentees, Articled the 11*th* of Iune following, the Grant not only to pay the Authour all the charges of passing the Patent laid down by him, but also to lay in for a common and joynt-stock each man of the four, one hundred pounds, and so from time to time, what more stock any three of the Pattentees should think fit to be laid in for the making of Iron into cast works and bars, and likewise for the Melting, Extracting, Refining and Reducing of all Mines, Minerals, and Metals, with Pit-cole, Sea-cole, Peat and Turf, which Articles are yet extant.

Now let me without offence insert the opposition we all had, by meams of powerfull Iron-Masters, with Sir Philibeard Vernat, a Dutch Man, and Captain Whitmore, who pretended much unto his late Sacred Majesty, but performed not their undertaking, which caused the Author, and his Partners thus to Petition.

To the King's Most Excellent Majesty.

The Humble Petition of Sir George Horsey Knight; David Ramsey, Roger Foulke, and Dud Dudley, Esquires:

Humbly Sheweth,

That whereas Your Petitioners being called before the Right Honourable, the Lord Keeper by Your Majesties Appointment, touching the making of Iron with Pit-cole, Sea-cole, Peat and Turf, for which they have Your Majesties Pattent; and seeing that Sir Philibeard Vernat, and Captain Whitmore, who are not Inventors, have obtained a Pattent also for the same; yet before their Pattent Granted, Sir Philibeard was ordered at Council-board, according to his Great Undertaking, to perfect his Great Undertaking and Invention within Two Years, and there hath been near Three Years passed, and yet have made little or no Iron: still he Opposeth Your Petitioners, and doth neither benefit himself, but hinders Your Majesty, and the Kingdom.

The reference unto the Petition followeth; At the Court of Greenwich, May 20th, 1638. His Majesty is pleased to refer this Petition to Master Atturney, and Master Solicitor General, to call the Petitioners before them, and to compose the differences between them; (if they can) or otherwise, to certifie his Majesty their opinions therein:

Sir Sidney Montegue was then
Master of the Requests.

But Sir Philibeard Vernat, and Captain Whitmore never appeared any more for their Invention.

Not long after the Wars came on, and caused my partners to desist, since which they are all dead, but the Author, and his Estate (for his Loyalty unto his late Sacred Majesty) and Master, (as by the Additional Act of Parliament may appear) was totally sold.

Yet, nevertheless, I still endeavored not to bury my Talient, took in two Partners into my inventions, Walter Stevens of Bristow Linnen Draper, and John Ston of the same City Merchant, after the Authour had begun to Erect a new work for the Inventions aforesaid, near Bristow, Anno 51, and there we three Partners had in stock near 700l. but they not only cunningly drew me into Bond, entered upon my Stock and Work, unto this day detained it, but also did unjustly enter Staple Actions in Bristow of great value against me, because I was of the Kings Party; unto the great prejudice of my Inventions and Proceedings, my Pattent being then almost extinct; for which, and my Stock, am I forced to Sue them in Chancery.

In the interim of my proceedings, Cromwell, and the then Parliament, granted a Pattent, and an Act of Parliament unto Captain Buck of Hampton Road, for the making of Iron with Pit-cole and Sea-cole; Cromwell, and many of his Officers were Partners, as Major Wildman and others; many Doctors of Physick and Merchants, who set up diverse and sundry Works, and Furnaces at a vast charge, in the Forrest of Dean, and after they had spent much in their Inventions and Experiments, which was done in spacious Wind Furnaces, and also in Potts of Glass-house Clay; and falling afterwards, got unto them an Ignenious Glass-Maker, Master Edward Dagney an Italian then living in Bristow, who after he had made many Potts, for that purpose went with them into the Forrest of Dean, and built for the said Captain Buck and his Partners, a new Furnace, and made therein many and sundry Experiments and Tryals for the making of Iron with Pit-cole and Sea-cole, &c. But he failing, and his Potts being all broken, he did return to Bristow frustrate of his Expectation; but further promising to come again, and make more Experiments; at which time Master John Williams, Master Dagneys, Master of the Glass House was then drawn in to be a Partner for 300l. deposited, and most of it spent, the said Williams and Dagney hearing that the Authour had knowledge in the making of Iron with Pit-cole, Sea-cole, &c. they from Cap. Buck, and the other Partners importuned the Author, who was at that time in great danger by the Parliament, (being a Colonel of the Kings Party) to go along with them into the Forrest of Dean, which at that time durst not deny; Coming thither, I observed their manner of working, and found it impossible, that the said Edward Dagney by his Invention should make any Iron with Pit-cole or Sea-cole, in Pots to profit: I continued with them till all their Potts and Inventions failed; at every Dinner and Supper, Captain Buck, Captain Robins, Doctor Ivie, Doctor Fowler and others, would aske the Author why he was so confident that Iron in quantity could not be made by their new Inventions? I found it a difficult thing to disswade the Partners from their way, so confident were they to perform the making of iron with Pit-cole or Sea-cole to profit; that they desired me to come again a second time into the Forrest to see it Effected; But at that time, I saw their failings also.

Yet nevertheless Captain Buck, and his Partners Erected new Works at the City of Bristow, in which they did fail as much as in their former Inventions; but Major Wildman, more barbarous to me than a Wildman, (although a Minister bought the Authors Estate, near 200l. per Annum, intending to compell from the Author his Inventions of making of Iron with Pit-cole; but afterwards passed my Estate unto two Barbarous Brokers of London, that pulled down the Authors two Mantion Houses; sold 500 Timber Trees off his Land, and to this day are his Houses unrepaired.

Anno 1655. Captain Buck and his Partners wearied of their Invention, desisting, An. 1656. Captain John Copley from Cromwell obtained another Pattent for the making of Iron with Pit-cole and Sea-cole; He and his Partners set up their Works, at the Cole Works near Bristow, and endeavor'd by Engeneers assistance to get his Bellows to be blown, at or near the Pits of Coal, with which Engines the Work could not be performed: But the Author coming to see the said Works, and after many Discourses with Captain Copley, his former Acquaintance, told him plainly, if his Bellows could have been blown by those Engines, yet I feared he could not make Iron with Pit-cole or Sea-cole; he seemed discontented; whereupon, and without those Engines I made his Bellows to be blown feisibly, as by the Note under his hand appears (the first Note) followeth;

1656. December 30.

Memorandum, The day and year above-written, I John Copley of London, Gent. Do acknowledge, that after the Expense of diverse Hundred Pounds to Engineers, for the making of my Bellows to blow, for the making of Iron with Pit-cole or Sea-cole near Bristow, and near the Forrest of Kings-wood; that Dud. Dudley, Esq. did perform the blowing of the said Bellows at the Works or Pits above-said; a very feisible and plausible way, that one man may blow them with pleasure the space of an hour or two; and this I do acknowledge to be performed with a very small charge, and without any money paid to him for the same invention:

John Copley.

Captain John Copley thus failing in his Inventions, An. 1657, he went into Ireland, and all men now desisting from the Inventions of making of Iron with Pit-Cole and Sea-Cole: The Author, Anno 1660. being 61. years of Age, and moved with pitty, and seeing no man able to perform the Mastery of making of Iron with Pit-cole, or Sea-cole, immediately upon his Sacred Majesties happy Restauration, the same day he Landed, Petitioned that he might be restored to his place, and his Pattent obstructed, revived for the making of Iron with Pit-cole, Sea-cole, Peat and Turf, into cast Works and Bars, and for the Melting, Extracting, Refining and Reducing of all Mines, Mettals and Minerals, with Pit-cole, Sea-cole, Peat and Turf; which said Laudable Invention, the Author was and is unwilling should fall to the ground and dye with him, neither is the Mistery, or Mastery of the Invention Effected and Perfected by any man known unto the Authour, as yet, either in England, Scotland or Wales; all which three abound with Pit-cole or Sea-cole, and do overmuch furnish other Kingdomes many with Pit-cole and Sea-cole, when they might make far better use of it themselves, especially Scotland and Wales, both for the making of Iron into cast Works and Bars; and also for the making of Steel, and Melting, Extracting, and Refining of Lead, Tin, Iron, Gold, Copper, Quicksilver, and Silver, with Pit-cole, and Sea-cole.

I shall not trouble you with the Petition, or my reasons and desires that were annexed unto it, for the making of Iron, and Melting of Mines, &c. with Pit-cole, &c. they are over long to relate, only the Reference to them is thus; (after my first Petition was lost, I Petitioned again.)

At the Court at Whiteh. 22. of June 1663.

His Majesty is graciously pleased to refer the consideration of this Petition to Master Atturney, and Solicitor General, or to either of them, together with the Petitioners Reasons and Desires hereunto annexed; and they, or either of them, are to inform, and certifie His Majesty, what they, or either of them in their Judgements respectively conceive fit for His Majesty to do concerning the Petitioners Humble Request, and then His Majesty will declare his further pleasure.

Robert Mason, Master of Requests.

After Master Atturney, and Sollicitor General would do nothing upon the Reference; the Author Petitioned His Sacred Majesty sitting at the Council-Board, for the Renewing of his Pattent, for making of Iron, and Melting, of Mines with Pit-cole, Sea-cole, often obstructed; the reference to that Petition followeth.

At the Court at Whitehall, July 25. 1660.

Upon reading of a Petition this day at the Board, being the same in terminis with this above-written, which His Majesty was graciously pleased by a Reference under the hand of Doctor Mason, one of the Masters of the Requests, to refer to the consideration of Master Atturney, and Master Solicitor General, together with the Petitioners Reasons and Desires thereunto annexed, to the Consideration of the Lords, and others Commissioners for the Treasury, who upon Examination of the particulars, are to give such order there-upon, as they shall find most proper for His Majestics Service.

Sir Edward Walker was
Clark to the Council, and
Garter King at Armes.

The Author, during the Lords Commissioners their time, could get no Order upon his Reference; But his Petition was left, with the now Right Honourable, the Lord Treasurer, to take or grant further order therein, but the Author hath gotten hitherto no order.

Therefore compelling necessity doth constrain (having prosecuted his Petition hitherto) him to desist from his Inventions, in which he hath taken more pains, care and charge, then any man, to perfect his new Invention in these Kingdomes.

[To be Continued.]

The Clyde Steel Works, at Sheffield, were destroyed by fire a few days ago. Samuel Osborn & Co. are the proprietors.

A British iron and steel company have purchased a thousand acres of land, for the purpose of working a rich seam of silkstone coal, which lies at an average depth of 880 yards, and is expected to yield several millions of tons of that mineral.

The Pequest Mining and Manufacturing Company are about erecting furnaces for the manufacture of pig iron, near their mines, a few miles east of Belvidere.

The largest association engaged in the iron trade in the world is said to have been recently formed in Westphalia, Germany, three great companies having been consolidated, and the works controlled by them producing annually 20,000 tons of steel and 250,000 tons of iron in various forms.

Mr. Bessemer says he is prepared to supply guns that shall fire balls of five tons at the rate of one a minute, and to construct a gun to fire a ten ton ball.

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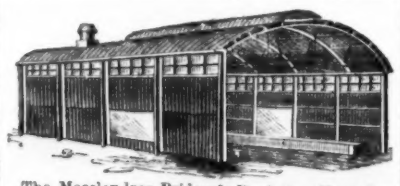
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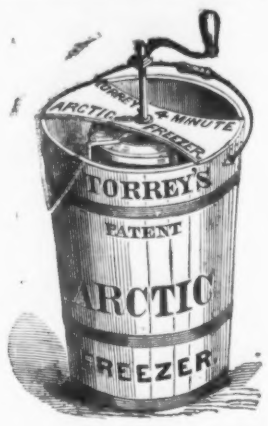
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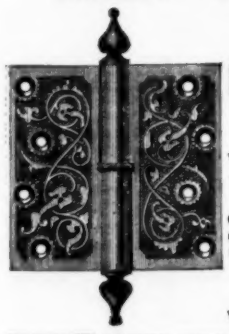
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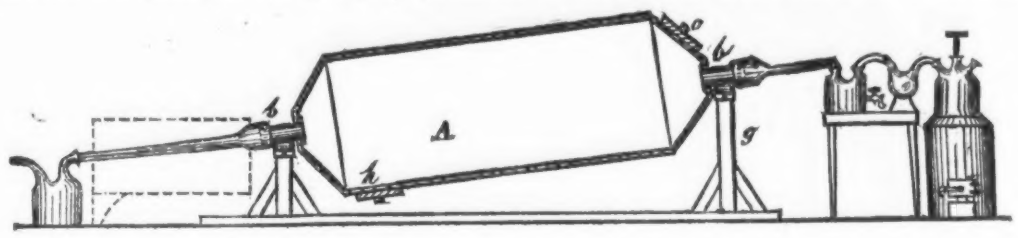
New Patents.

We take from the records of the patent office at Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN TREATING TIN SCRAPS AND OBTAINING USEFUL PRODUCTS.

Specification forming part of Letters Patent No. 135,578, dated February 4, 1873, issued to Henry Panton, of New York, N. Y.

The first step or part of this invention relates to the conversion of the tin on the tin-plate scraps into bichloride of tin by subjecting them to the action of dry chlorine gas in a rectangular box of iron suspended on cast hollow journals of the same metal, as shown in Fig. 1, at *b b*, A in the figure representing the rectangular box. In this box the tin-plate scraps to be treated are inserted through a man-hole at *c*, which is afterward tightly closed by a lid. Over the end of the cast-iron journal is fitted a cap, which allows the journal to turn in it. From this cap a lead pipe leads to a wolf-bottle containing fused chloride of calcium, and from the latter a lead pipe to a second wolf-bottle containing a small quantity of water, and then to the retort for generating chlorine gas. *g* represents a frame supporting the whole. The opposite and lower end of the box, which is inclined at an angle of about fifteen degrees, is a counterpart of the end just described. Over the journal at this end is fitted a cap leading to a straight lead pipe, which serves as a condenser, passing through a box containing water. At the lower end of this tube a wolf-bottle is adjusted for receiving the bichloride of tin. At the lower side of the box A, Fig. 1, at *h*, is a man-hole, of size and construction the same as at *c*, for the purpose of discharging the scraps after treatment.



IMPROVED APPARATUS FOR TREATING TIN SCRAPS.—*Fig.* 1.

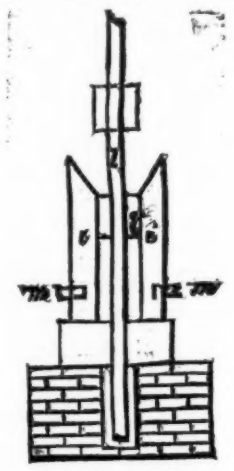
The size of the rectangular box is five feet square by ten feet long, having a capacity of two hundred and fifty cubic feet, and holding of the refuse scraps, when charged, about three thousand pounds.

The chlorine-generator is composed of a cast-iron flask, the upper part of which is removable, and rests in a groove in the lower section, so arranged that it may be luted to render it gas-tight. The lower section is lined with lead. The proportions of four parts of chloride of sodium mixed intimately with three parts of fine pulverized black oxide of manganese are placed in the generator. Onto this is poured a mixture of seven parts by weight of strong sulphuric acid diluted with seven parts of water, the mixture having been sometime previously made and allowed to cool. The connections of the generator with the rectangular box having been made, as above described, and the condensing-pipe adjusted, a moderate fire is made under the generator, and the mixture of acid, manganese and salt is from time to time agitated by means of the stirrer. The chlorine gas liberated passes over into the box, unites with the tin, forming bichloride of tin, which, from the heat resulting from the chemical action, is in the form of vapor, and passes off to the condenser, where it becomes a liquid and falls into the wolf-bottle placed to receive it. The process of the operation may be observed at the end of the condenser when the process is working. Properly there is no indication of free chlorine, but when the process is completed free chlorine passes over into the wolf-bottle, where it may be observed by its green color. During the process the rectangular box is occasionally revolved, for the purpose of agitating and turning over the scraps so that all parts of them may be exposed to the action of the chlorine gas. When all the tin has been removed by the chlorine, carbonic-acid gas or atmospheric air is forced into the upper end of the box, and any remaining vapor of bichorlide of tin is driven into the condenser, while the carbonic acid gas or air escapes through the bottle. It is better to pass the carbonic-acid wolf-gas or air over fused chloride of calcium to free it from any moisture before passing it into the box.

The man-holes are then opened and the scraps removed, and the process repeated. The bichloride of tin in the wolf-bottle practice has proved to be chemically pure. A solution of this is made with water, and the tin precipitated by common chalk, or lime, as an oxide. The liquid portion is drawn off, the oxide dried, mixed with powdered charcoal, placed in a crucible, and reduced to metallic tin. The chloride of calcium in the solution is obtained by evaporating the water.

The second part relates to the conversion of the scraps into wrought-iron bar or cast-steel. To do this an apparatus or stamping-mold is provided, as shown in Fig. 2, of which Fig. 3 is a plan view. *i i* represent a hollow cast iron cylinder, the bore of which is six inches in diameter, and the sides at least four inches thick and twenty-one inches high. The inner side has a flare, making the top of a funnel shape. The bottom of this cylinder is level, and rests on the face of a cast iron anvil, *j*, about six inches thick, with a bore two inches in diameter through its whole thickness. This rests on a stone foundation, *k*. A piston, *l*, two inches in diameter, having a hammer attached to it, as shown at *q*, which hammer fits somewhat loosely in the bore, passes down through the anvil and into a space left in the stone foundation. This piston is lifted to a suitable elevation by means of any hoisting device, but not so high as to bring its lower end out of the anvil. The scraps which have been freed from tin, as described in the first part of the process, are fed into the cylinder below the hammer, which is allowed to drop, when it is again elevated and another batch added, and thus repeated until a hollow cylinder from the scraps has been densely formed of about one foot in hight. The scraps are removed as follows: The cylinder, *i*, *i*, is divided longitudinally into two equal halves or sections, strongly hinged on one side, so that they may be spread apart by handles at *m*, *m*. On the opposite side of the hinges are strong clasps for holding the mold together while being filled to form the ingot. The piston is elevated sufficiently to clear the ingot, the clasps unfastened, the mold, or cylinder, opened, when the ingot may be removed. The cylinder is closed again and the operation repeated. The next step for converting these ingots into cast steel is to place them into a "forty pound" plumbago crucible, which the hollow ingots have been proportioned to fit. The powdered charcoal, pyrolusite, manganese, or other required ingredients, are placed in the hollow provided for them in the center of the ingot. The whole is then sprinkled over with powdered brick-dust in the usual manner practiced in preparing batches from nuggets of bar iron in making ingots of cast steel. The crucible is now placed in the furnace, the contents melted and cast into ingots, when it is forged, rolled, drawn or treated in the usual manner practised in working steel.

When the object is to convert these scrap ingots into wrought iron bar, they are placed on the hearth of a puddling furnace and heated


Fig. 2.

to a welding heat, when the puddler, through the puddling holes of the furnace, works a number of them together into one mass, or bloom; it is then removed from the furnace to the squeezers commonly employed in iron forges, and kneaded into a homogeneous mass, when it is removed to the grooved rollers now in use for rolling bar iron, and rolled into bars.

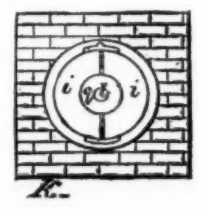


Fig. 3.

Claim.—1. A treating-chamber which, by being made to revolve, will agitate and turn the tin plate scraps within it over, so as to expose all parts of their surface to the action of chlorine gas.

2. The rectangular shaped chamber or receptacle, supported, at an inclination of a few degrees, by hollow journals turning between friction rollers, on a frame, and having at the upper end a man hole, and on one of the sides, near the lower end, a second man hole—the first through which to charge the chamber, the second to discharge its contents—all arranged and constructed substantially as described.

3. The compact hollow ingot of treated tin plate scraps, of about the proportions described, and the insertion of the powdered charcoal, pyrolusite, and other ingredients used in the manufacture of cast steel, subtantially as described.

4. The combination of a revolving treating chamber with a chlorine generator and a condenser, as and for the purpose set forth.

5. The mold herein described for forming hollow ingots of scrap iron, composed of the sides *i i*, perforated anvil *j*, piston *l*, and hammer *q*, combined and arranged to operate as set forth.

The Terre Haute *Gazette* says that an experienced road master reports that a rail on one of the roads running through that city shrunk to such a degree that it broke the bolt at the fish-joint, and left a large space between rails, caused, it is presumed by the intense cold.

The Lehigh Rolling Mills.

The Allentown *Chronicle* says: The rolling mill interest of our valley appears just at present to be laboring under difficulties. It seems that while pig iron declined in price last fall only some $7 per ton, bar iron declined over $20 per ton, and now pig iron has advanced from $3 to $4, while bars have not advanced at all. In addition to this, about a year ago the bar mills of the valley adopted the policy of paying their men on a basis governed by the selling price of manufactured iron. This has not been strictly adhered to owing to the action of a Philadelphia mill; consequently the valley mills to-day are paying their labor on a basis of four and a half cents per pound, while they are selling their iron at from one to three-tenths of a cent per pound below this, so between the extreme price of pig iron and of labor our rolling mills are ground between two mill-stones. So unremunerative has the business become that we are informed that the Catasauqua Manufacturing Company, who make more bar iron than all the Philadelphia mills combined, have already stopped work at their Fern Dale Mill, and unless some change takes place in the cost of their materials, or an advance occurs in bar iron this stoppage will speedily be followed by the shutting down of their mills at Catasauqua and Allentown.

At a recent meeting of one of the British engineering societies, some facts of a special character were adduced in support of the opinion that the limit of advantage, in the use of high-pressure in expansion, is reached at about 40 pounds per square inch, and that any increase of pressure beyond that is useless, and consequently, for various obvious reasons, disadvantageous. The statements made did not, it is reported, appear either clear or conclusive, and were not indorsed by the meeting. It was admitted that about 60 pounds' pressure is the present practical limit employed, but no very distinct reason was assigned for stopping there, except that the makers had found by experience what they could do with that pressure, and felt safe in its use. Among other statements made, bearing on the question discussed, was that by several speakers—namely, that the double-cylinder engine contained elements admitting of the boiler pressure being pushed further than with the single-cylinder engine, and it was stated by an eminent Liverpool maker that 60 pounds' pressure is not the limit of pressure, either theoretically or practically.

The Pittsburgh *Commercial* remarks that the severe weather of the past winter appears to have determined beyond question, the superiority of steel rails over iron. The railroads of the country combined do not report the failure of a dozen steel rails. In the few cases reported, the cause of breakage was either a flaw in the metal or unnatural usage. Compromises, however, have been proved to be failures. It was thought the heavy expense of steel might be somewhat lessened by welding a steel top, or face, upon an iron body. The advocates of this process claimed that continuous traffic would only tighten this welded cap. Experience has taught exactly the reverse. Anything in the shape of a cap or patch has invariably worked loose. The imperative requirement is—clear steel of the best quality.

The idea of a platinum coinage continues to be a subject of discussion among the scientists of Europe. No other metal, not even gold or silver, possesses so many inherent qualities for such use. It would be proof against forgery on account of its high specific gravity; its scarcity gives it an intrinsic value, and its indestructible nature admirably fits it for standing the wear of constant use. It has already been largely used for medals in France, and successful experiments have been made for converting it into coin. In Russia it was actually used for coin previous to 1845, when it was demonetized by imperial ukase. That step was taken at the time because the ready methods of working and refining the metal were not well understood. That objection is now, however, fully removed.

Gen. Wilder, of the Roane Iron Company, Rockwood, Tenn., who has done a great deal to direct attention to the mineral resources of that State, reports that red fossiliferous ore costs there $1 to $2 per ton, lime 85 cts. per ton, and coal only $1·50. It takes 2·85 tons of the coal to make one ton of iron. The ore found at the surface yields 42 per cent. of iron; that underground, 62 to 66 per cent. The General also says "that for 400 miles from Central Alabama, up through Tennessee into Virginia, the ore, coal and limestone are contiguous, persistent and some sections of it better than others" It is claimed that Mobile, Ala, would be a good place for a glass factory, where it would yield profitable return.

The Clinton Iron Company, a newly formed corporation, have begun the building of a blast furnace in the village of Kirkland, eight miles from Utica, N. Y. The officers of the company are: president, Prof. Theo. W. Dwight; vice president, Sidney A. Bunce; secretary and treasurer, Theo. Avery; superintendent, B. S. Platt. Iron ore and limestone are abundant in the vicinity of this furnace.

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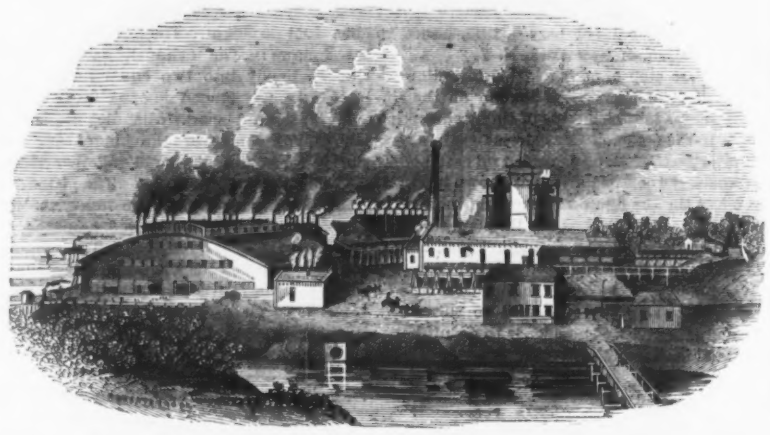
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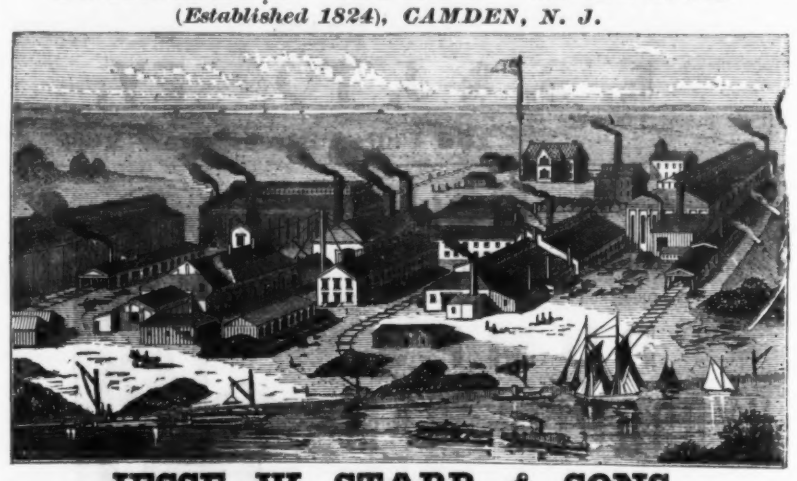
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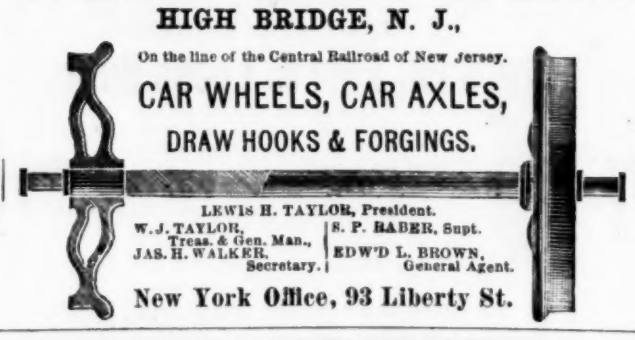
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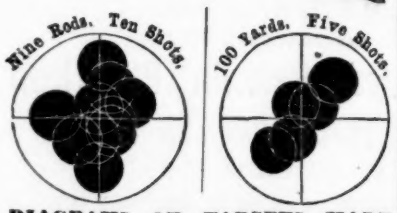
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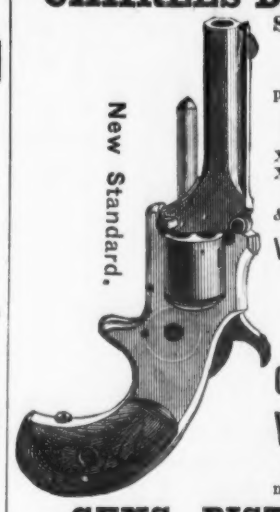
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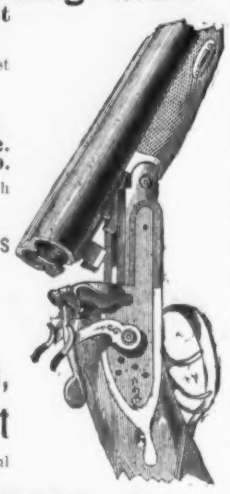
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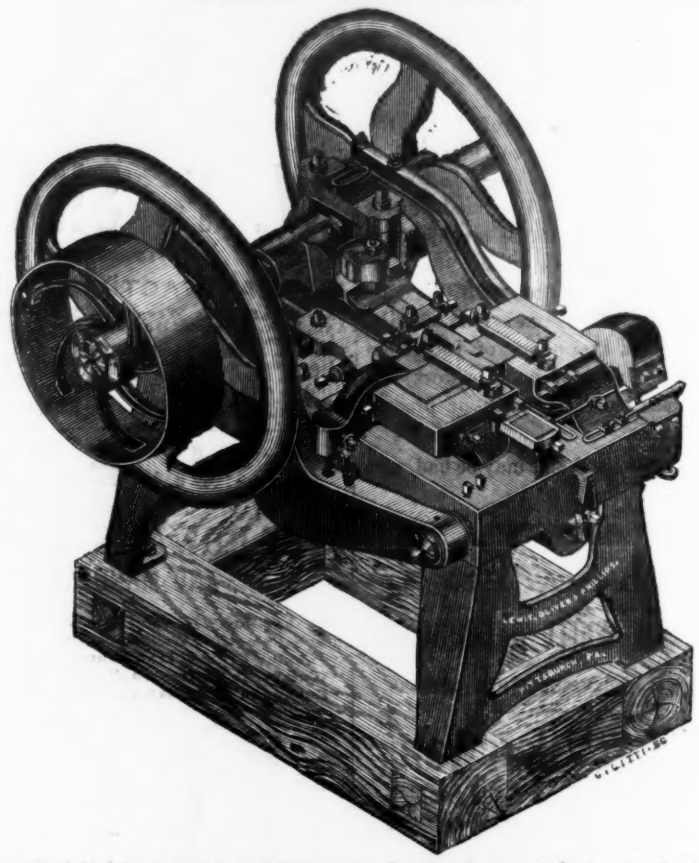


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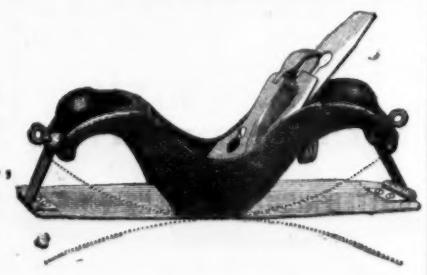
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Stanley Rule & Level Co.,

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Sold by all Hardware Dealers.



The Armory at Springfield.

A correspondent of the Boston *Journal of Commerce* writes as follows concerning the United States armory at Springfield:

THE MILLING DEPARTMENT

is under the superintendence of Mr. Chamberlain, who entered the service of the United States in 1842. The first story of this building is devoted to barrels of the Springfield gun. These barrels are received from what is termed the water shops, in the rough state, and are finished here. The second story is devoted to screw making and the rear sights of guns. The screw machines in this department are very complete, having received most important improvements from ideas worked out by Mr. Chamberlain in 1862.

Of the Remington gun, they make here the breech-block and hammer, and are fast finishing on order of 10,000, of what are denominated the Remington locking rifle of 1871.

The third floor, when in operation, is used for breech-block drilling, and completing, through all the mechanical stages, the Springfield gun; also parts of work on breech-block and hammers and other small "limb work" of the Remington gun. Here are to be observed some very fine milling machines made by the Ames Manufacturing Company, of Chicopee, some machines from R. Hoe & Co., of New York, the Phœnix Company, of Hartford, and Snow, Brooks & Co., of Meriden, Conn. Steam-power was not used in this Armory until the winter of 1844-5, when a very powerful and handsome engine was put in by Otis Tufts, of Boston. A portion of the basement of the building contains machinery for broaching bands for muskets, but has not been worked since 1866. During the war the presses were run day and night.

THE MACHINISTS DEPARTMENT.

In this department are made the models of parts of the gun ready for the forge at the water shops; all working and standard gauges are also made here, and distributed to the different shops for finishing and inspecting the work. Here are also the draughtman's office, treasurer's office and storeroom for standard gauges, many of which are from the Brown & Sharpe Manufacturing Company, of Providence. In constant use here are some very handsome tools made by the Putnam Machine Company, of Fitchburg, and Wood, Light & Co., of Worcester, and Milling and Drilling Machines from the Brown & Sharpe Manufacturing Company. All these tools and machines give very general satisfaction to the government officers.

THE CARTRIDGE ROOM.

In this shop cartridges of all sizes are made for government use and for experimental purposes, including the celebrated "Martin" cartridge, invented by Mr. Martin, one of the government workmen still employed in the armory. The process of manufacture is peculiar and interesting. The first step is to take copper strips and punch out the "cupping." This is then drawn through dies of three sizes, then annealed and passed through the finishing die. After this they are put in a small lathe made expressly for the work, and cut to the required length. Another machine forms the head and flange. The detonating matter is then inserted, and the case charged with ball and ammunition. This process is very simple, and is rapidly done by the ingenious mechanism employed. There is also a machine for priming and tapering cartridges, invented by Mr. Gill, of Frankfort, Penn. In the basement our reporter found a general repair shop; also a room for turning gun stocks from the rough, and on the first floor is a carpenter's shop for the manufacture of gun cases, office furniture, and for finishing gun stocks.

Near by stands a strong building, known as the barrel testing shop, where the new barrels are ranged in a grooved plate, loaded and fired from the outside. Here, if they must burst, they can do no harm, for the flying fragments are held in by the stout walls.

Next the neat and tasty engine room was shown, where a powerful Woodruff & Beach condensing engine is constantly at work. The boilers are four in number, two of government make, and two from Woodruff & Beach. Adjoining is the pump room, where are powerful pumps for furnishing water for mechanical and fire purposes.

The filing and polishing department is under the care of Mr. L. C. Allen. Here are filed and polished bayonets, ramrods and sundry parts of guns and side arms. Near by is the laboratory, under the charge of Mr. Bennett. Here gold, silver and nickel plating is applied to parts of arms, and oils, spirits, metals, etc., are tested for the government.

Martial display is always used to cover up the dreadful front of war, and it is pleasant to know that if we must kill our enemy, we can do it with beautiful tools. An examination of the various processes for polishing, etching, plating and decorating swords, proved very interesting, and displayed a high degree of artistic skill on the part of the armory people. Space forbids the details, but we may have the grim satisfaction of knowing that our officers' swords are as beautiful as any in the world. May the arabesques never be stained with dark red rust.

Even the scabbards are decorated and plated with solid silver or nickel. The first process is to polish, then straighten, and to give a second polish. One-half being browned for the use of the navy, and the other being plated for the army. The scabbards are made in two parts, and between every operation they undergo careful inspection. When the last polishing is done, the parts go to be "assembled" or put together in the machine shop. In this polishing department emery wheels are used for polishing, and a clever device was noticed for keeping the wheels warm and moist in boxes heated by steam pipes.

Then to the water shop, where the forging and other preliminary iron work is done under the charge of Mr. Bailey. The first shop that came under our reporter's notice was the blacksmith shop, one of the finest and largest structures of the kind in the country. It is fully supplied with hammers and every requisite tool, and during the war 1100 men were constantly employed here. Near by is the

GRINDING ROOM,

fitted with some very heavy stones, some of them weighing five tons.

THE FURNACES

were invented and built by Mr. Bailey for brazing purposes, fed by gas made on the premises. These furnaces are used in reinforcing condemned barrels, some one thousand worn out barrels having been already done. About 30,000 Sharp's rifles have also passed through this operation. The

PROVING ROOM

is where guns are twice proved with powder and ball, after which they are washed in warm water and then in lime water to prevent rusting. Then the annealing shops and vitrioling chambers were examined, and after that the trimming room, where the burr is turned off and the parts put into shape. Next the machine shops, where dies, gauges, etc., are made, and repairs of tools carried on. These shops are well equipped with machinery from various makers, including the Putnam Machine Company, of Fitchburg.

THE ENGINE ROOM

contains two engines, which have not been much required since the war. The upper story of this building is used for a store room, and also for the third boring of barrels, while another floor is devoted to polishing, boring and rifling rifles. The boring of the barrels requires skilled labor and good tools. Two barrels are bored at one time, and adjusted with little slips of wood and paper, and so accurate is the work that in boring, the bores vary only about one thousandth of an inch. Finally came the

TARGET PRACTICE,

performed by Mr. R. T. Hare, for the purpose of testing the firing qualities of rifles. One Springfield rifle is shown that had been fired 9000 times, and yet appeared to be as good as ever.

The following historical facts connected with the arsenal may be of value: It was first made an armory about the year 1795, under civil administration, and was placed under military rule about 1841, under Col. Ripley (afterward made Gen. Ripley) to whom is due many of the improvements now in use. It was afterward changed to civil rule, and so remained till the beginning of the war. Mr. Geo. Dwight was one of the civilian commandants. Capt. Dwyer took military command, then Col. Lindlay up to 1866, after which he was promoted to the chief of ordnance and went to Washington. The present officers in command are Col. Benton, and Majors Ingersoll and Edies his immediate subordinates.

Bronze Ordnance.

The bronze used in the ordnance made in the British government foundries is compounded as follows:

Copper	22·	parts.
Tin	3·3	"
Broken ordnance	80·7	"
Runners, scraps, &c	11·4	

Brass and bronze were once used, and sometimes zinc was added, but zinc has been disused; brass and bronze were separately made fusible first, and then combined.

The Keller Brothers use the following proportions:

Copper	100	parts.
Zinc	6	"
Tin	9	"
	115	

The proportions used in the principal foundries of Europe have lately been as follows:

	Copper.	Tin.
England	100	12·5
	90	10
	89 to 92	12 to 8

Also:

Austria, Bavaria	100	10
Denmark	100	10
Spain	100	11
Prussia, Russia, Saxony	100	10
India	100	12·5

France added iron (cast) and steel, but the expansion and tenacity did not result satisfactorily.

The difficulties have been weakness in resisting friction, and sponginess through oxidation resulting from the heat of combustion of the charge. In the Indian ordnance, the tests showed the expansion to be uncertain and unequal, and the rifling gave way by the friction of the bolt-studs. The remedy suggested is to have only a three-fourths turn in rifling, and the groove to be oval instead of sharp angles; also, to fuse and thoroughly incorporate the alloy by electrical heat, or to combine aluminum with copper-bronze, as it readily combines, is tenacious, and does not oxidize too much.

The inaccuracy of ordinary observation is well illustrated by an incident mentioned in the *Journal of the Franklin Institute*. Three careful observers endeavored to count the blows of a rapidly striking steam-hammer, which was believed to be moving at the rate of 300 blows per minute. The highest count was 325, the lowest 275. Mr. Coleman Sellars thereupon devised an instrument to record the exact number with perfect accuracy, and it was found that the count of persons rarely accorded with that of the machine. When the hammer struck 300 blows per minute the observer almost always over-counted.

An improved packing for steam engines, pumps, etc., is composed of fibrous strands into which melted paraffine, stearine, or other lubricant, with a suitable powdered substance, is introduced during the plaiting of the strands, in order that the fibres be thoroughly impregnated. The fibrous material is hemp. The brand at or near the point where the different strands are interlocked, pass through an opening in a plate, when the strands are condensed and the braid rendered uniform in thickness.

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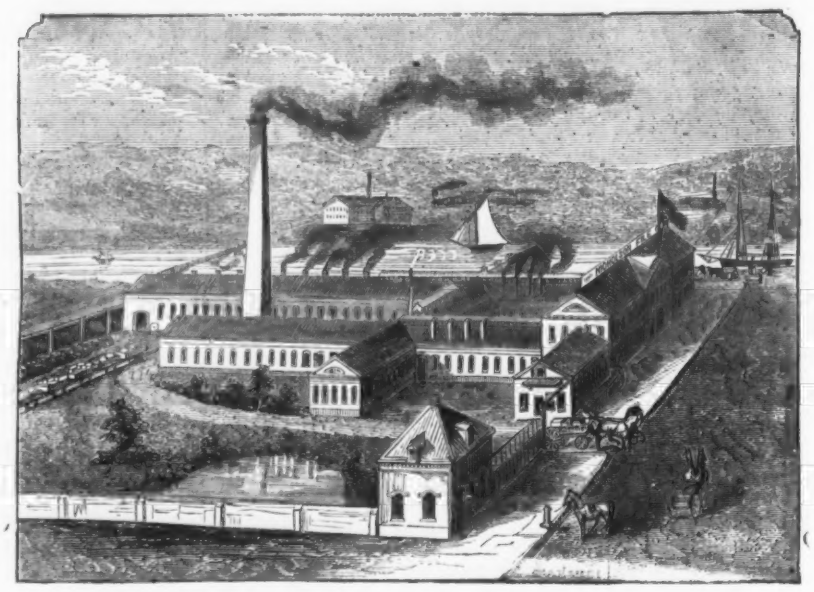
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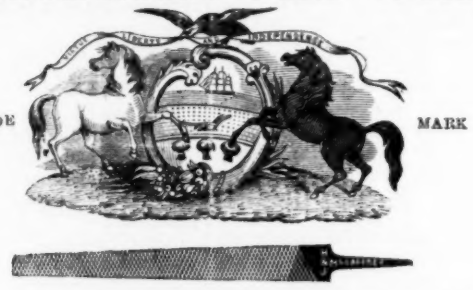
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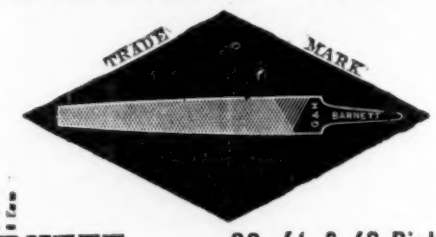


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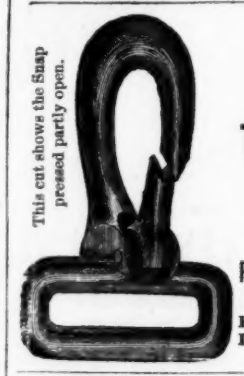
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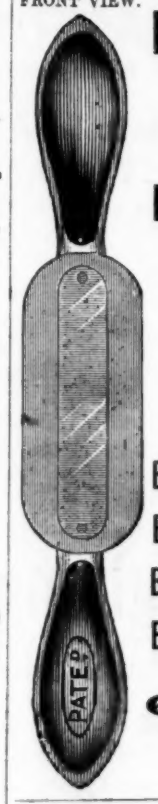
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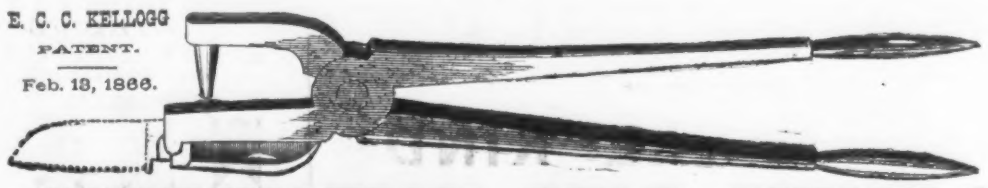
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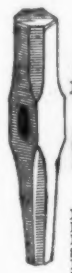
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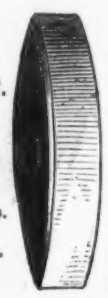


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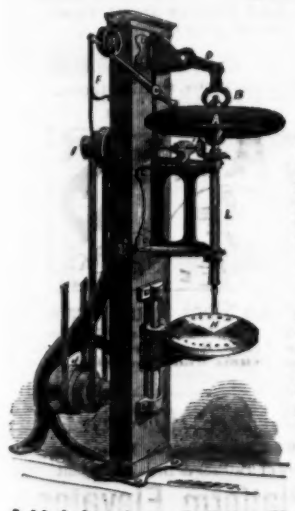
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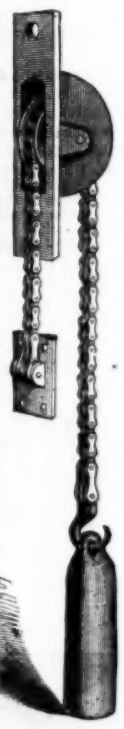
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The Affairs of Messrs. Wood & Co.

The arrangement made by the creditors of Jas. Wood, Sons & Co., and James Wood & Co., has already been announced.

The firms are to have three years to cancel their obligations, the first payment of one-fifth to be made one year hence, and the same amount to be paid semi-annually thereafter. They are to conduct their works in their own name, but under the direction of a supervisory board of three, consisting of W. K. Nimick, of Singer, Nimick & Co.; B. F. Jones, of Jones & Laughlins; Wm. Phillips, president of the Allegheny Valley Railroad, who are to have absolute control of the property of James Wood, Son & Co., and conduct it as they shall deem best.

All of the creditors do not agree to the above arrangement, and the following circular, prepared by a well-known legal gentleman of this city, has been submitted as a substitute:

A Deed of Trust or Voluntary Assignment to Messrs. Jones, Phillips, Nimick, Kimberly & Spearman on the following trust, viz.:

To take possession of the property, and appoint a manager or managers, and clerks under them, to operate the furnaces, mills and coal so long as may be necessary to work up and convert into saleable condition all the stock and material now on hand, and to add any further stock necessary to work up the present stock, and use moneys derived from sales for such purposes, and as soon as a reasonable price may be had to sell the real estate, or so much as may be necessary to pay the creditors; with full power in the trustees to use their best judgment as to time and terms, and parts and portions sold, and entire discretion as to operating the works, &c., keeping in view the best interests of the creditors and least sacrifice of assignors' property.

The following reasons are given for this course:

1. A trust deed, or assignment, is a proceeding known and provided for by law, whilst an extension of the advisory committee attachment is an attempt at the same thing outside of the law, and an entirely new and untried experiment, giving the committee powers with no law to enforce them. It is admitted by all that Messrs. Wood should have a committee with legal powers.

2. A trust deed, or assignment, places the desired advisory committee itself under the responsibility, and gives it the powers and remedies of trustees; the other plan allows neither of these advantages.

3. The trust deed secures all the property at once for the present creditors, and under exclusive control of the trustees, and gives any creditor the power of at least once a year having an account, but not the power to annul the trust or wind up the business as long as the trustees are properly managing, and all the trust property has eventually to be accounted for.

4. The trustees named above were mostly suggested by the Messrs. Wood themselves, and are friendly disposed to them, and such men as the creditors could all confide in, and it would be to the advantage of the creditors to have one or two of the trustees as committee in the neighborhood of the main property at Wheatland.

5. The Extension and Advisory Committee plan leaves all the property and the contracting of new debts under the legal power of the debtors, which is questionable policy.

6. The Advisory Committee has no legal status, and because it cannot be expected that men, however good, when they have no interest or legal responsibility of any kind, or compensation, would give that amount of time and service necessary to a careful insight and control of so extensive a business; and if it happened the committee and the Messrs. Wood should disagree the only remedy would be the abandonment of the whole scheme, and to begin where we propose to begin now, either by an assignment or bankruptcy.

7. If Messrs. Wood should see fit to differ with the committee or sell and convey portions of their real estate without consulting the committee, there is nothing to prevent them from doing so; and a bill in equity to cancel such conveyance would be a tedious remedy, and would affect a bona-fide purchaser for value, and it is doubtful whether the creditors could invoke the power of the Bank rupt Court in such event.

8. Under the extension every debt made by Messrs. Wood could put them and the whole property into bankruptcy and such power might be used by the creditors over them greatly to the prejudice of the old.

9. There can be no objection to the trust or assingnment which does not apply with great force to the extensions, neither can be carried out except by common consent of all creditors. The characters of the trustees names above, and the certainty of good management under egal trustees, would be more likely to gain common consent and the enlarged power given as above trustees if deemed necessary and even without this, by acquecsence of four months on a creditors part he could not afterward put the concern into bankruptcy.

10. The Extension impliedly excludes all inquiry as to extent of property or the members of the firms, or the nature and amount of debt held by relatives.

11. While Messrs. Wood ought to have every reasonable facility to save what they can of their alleged surplus million assets, it ought not be at their creditors' risk. * * * *

Bankruptcy is threatened, but even in that event the creditors have exclusive power of choosing trustees, and can choose those above named or others like them, and on petition of a respectable amount of creditors the Bankrupt Court would give all necessary power to work up or dispose of the stock.

Even Bankruptcy is better than the slip shod plan of a committee with veto and other proposed powers, and without legel power to enforce them.

The Danks Puddler in Middlesborough.

A special correspondent of the London *Standard*, writing from Middlesborough, says that on Tuesday, March 4th, there was effected at the Teeside Works of Messrs. Hopkins, Gilkes & Co. limited, a veritable revolution in English iron manufacture. For the first time, in a strictly commercial sense, machine puddling has taken the place of hand puddling within the four seas. This firm had signed, sealed, and delivered an agreement with the union and the men for the working of the Danks puddler, the men to receive the large wages of 13s. per diem. Under the superintendence of Mr. Danks, Jun., the work was begun at six o'clock on Tuesday, and proceed all day with the most satisfactory results to the manufacturers, and in a manner which completely upset the views expressed by the men on Monday. Last year an experimental furnace was set up at the Teeside Works, and answered uncommonly well. On Tuesday the Danks puddler was worked as a matter of business as well as a school of instruction, and the very ingenious "squeegee," or mill for beating the "bloom" into shape, was commercially used in combination with the puddler. This is a fresh point of departure for the iron trade of Great Britain. It was nearly seven before the rotary part of the puddler was charged. The two men—one attending to the steam engine and one to the metal—were not very long in picking up the method of managing the machine. When some "Blue Billy" and other "fettling" had been thrown into the glowing interior of the furnace 9 cwt. of pig metal was turned on a gigantic spoon into the rotary hollow wheel. A very slow motion was given to the machinery, until the pigs began to melt under the intense heat. Then the wheel continued to revolve, and the heat to be increased under a steam blast until the flames roared out of the round hole left in the moveable face to allow the progress of the process to be seen. When the liquid mass began to granulate and the blast was shut off, the fibre of the iron was seen as though it were boiled rice. The experienced eye now recognized the completion of the process, and the quick rotation was stopped, and only a turn now and again given to the chamber to form the particles into the needful "bloom" or mass of semi-solid iron, slag, and particles of still unexpelled carbon. Then the moveable front was rolled back, and a mammoth fork being introduced into the chamber, still all golden with intense heat, a slight quarter turn of the chamber rolled the great bloom on to the fork, which, worked by three men, was barely sufficiently powerful to control the fiery mass, from which the liquid slag ran in pints. Owing to the comparative imperfection of the subsidiary appliances, which, great as is their size, are not yet large enough for half-ton "blooms," there was some delay in tipping the bloom under the "squeegee," but when this had been accomplished the vast machinery played with the ruddy mass like a boy's hand with a piece of putty, the steam ram striking the end of the bloom and condensing the metal so that the squeegee and the grooved rollers might be sure each revolution to catch the mass. As soon as it was beaten into a rude cylinder the bloom was borne off to a great steam hammer, where it was cut by a knife under the blows of the hammer into two pieces, there being no rolling-mills yet erected large enough to deal with such a bloom direct. These two pieces when weighed proved to be more than five cwt. each, nine cwt. of pig iron having been put in in the first place. The increase came from the wear and tear of the lining or "fettling." Before five minutes past twelve the fourth charge for the day was in the chamber, and in an hour and a half was again ready for the squeegee. Nothing could possibly have gone altogether more smoothly, and so readily did the men pick up all needful information that before one o'clock Mr. Danks, Jun., was able to leave the apparatus in their hands, and to go on 'Change to attend the weekly gathering of ironmasters and agents.

What the State Geological Survey has Accomplished in Indiana.

Prof. E. T. Cox, State Geologist of Indiana, in his annual report of the geological survey of that State, just published, says:

At the present rate of progress of mining in Indiana, a few more years will develop an endless chain of mines over the entire area of the coal field of Warren county on the north, to the Ohio on the south, with a belt of blast furnaces girdling the zone of the block of iron smelting coal.

The old furnaces are all in blast and making good yields of iron. Arrangements are being made to build a new furnace, to be placed beside the Brazil furnace, which is to be blown by the machinery originally designed to run two stacks. Another is to be built at Terre Haute by the Virgo Iron Company, and one has already been built at Shoals, in Martin county, which will use principally native ore, referred to in my report of 1870. This ore occurs in great abundance in Martin county, and the semi-block coal found in Sampson Hill, a short distance south of Shoals, will supply it with fuel.

It is also highly satisfactory to know that by making known the extent and economical value of the minerals, the survey has had the effect to stimulate mining and manufacturing interests wherever it has been carried. I might further illustrate this by citing the increased activity in mining operations which it has brought about in Daviess county. At Washington, in this county, mines have been in operation since the opening of the Ohio and Mississippi Railroad in 1856, and the business has grown to fair proportions, but I think it may be said, without fear of exaggeration, that coal mining has received an impetus, and operations in that time have increased with a rapidity heretofore unknown. Lands which were rated at fifty and one hundred dollars per acre have advanced to two and three hundred dollars per acre, and capital from various parts of the country has been turned to this county for profitable investment. Instead of having their mining operations restricted to one seam—the Washington coal—the survey has pointed out the existence of no less than eight distinct seams, five of which are of workable thickness.

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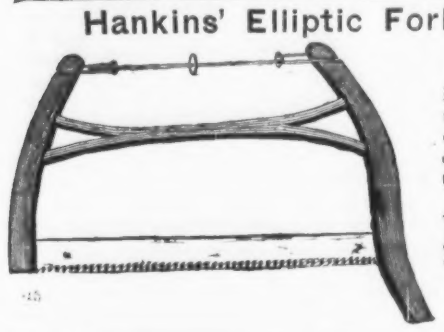
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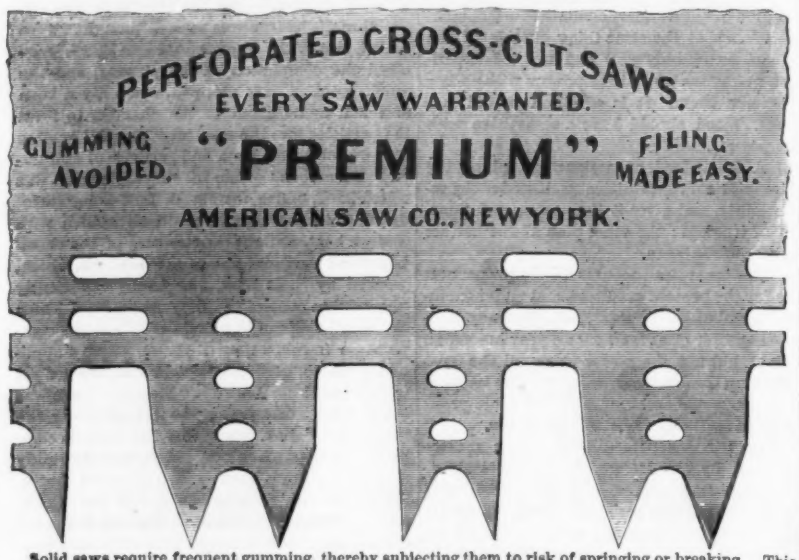
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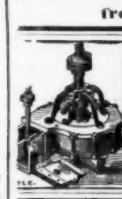
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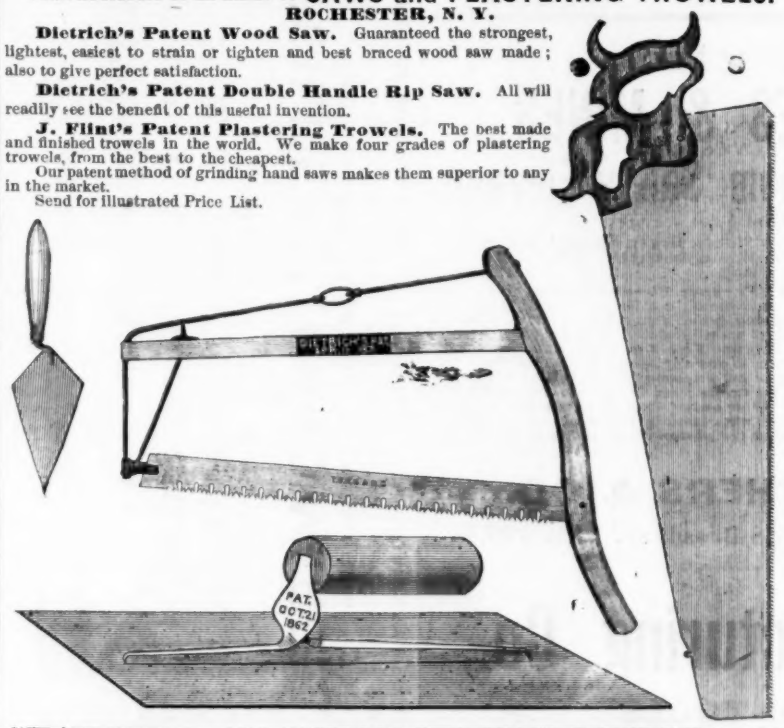
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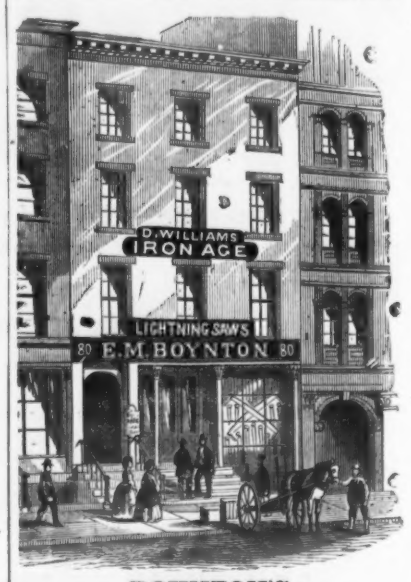
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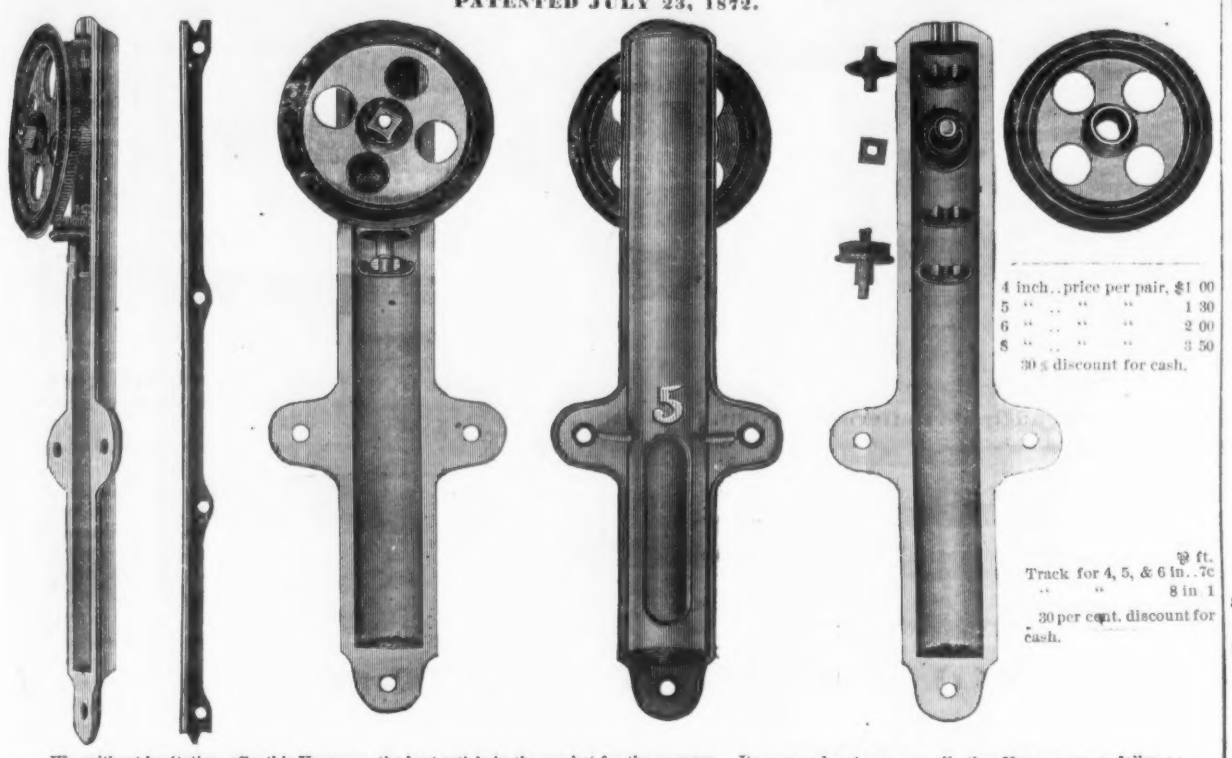
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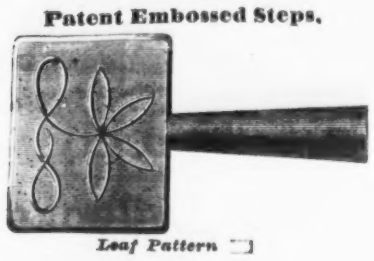
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Established 1850.

Patent Embossed Steps.

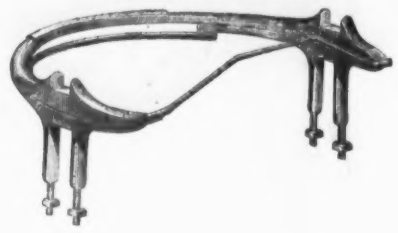


Leaf Pattern

King Bolt Yokes.



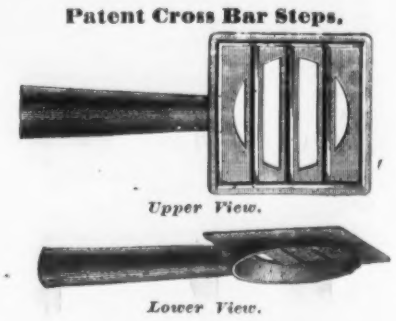
No. 6 Fifth Wheels.



1871 Pattern Shaft Couplings.

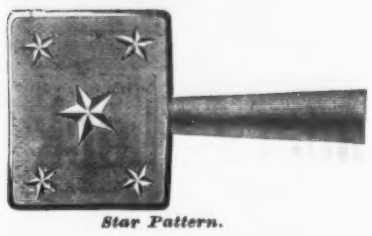


Patent Cross Bar Steps.



Upper View.

Lower View.



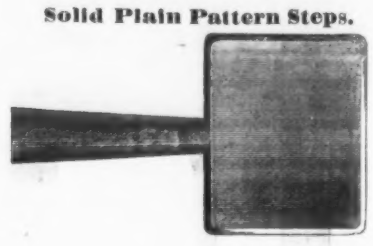
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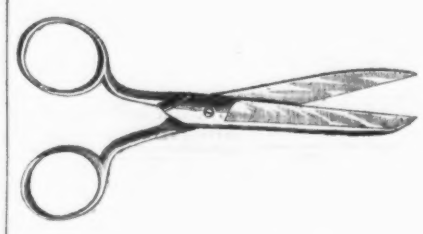
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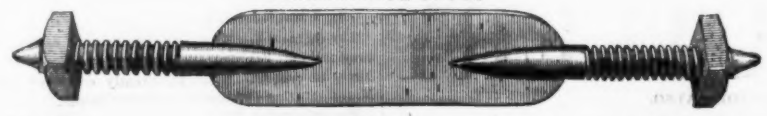
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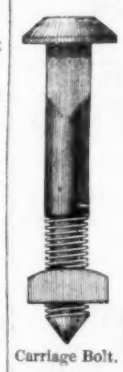
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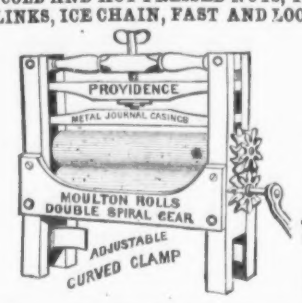
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Jones & Laughlins, Pittsburgh, Pa..... 4
Leonard John, 450 & 451 West St., N. Y..... 4
Lynchburg Iron Works, Lynchburg, Va..... 4
Milwaukee Iron Co., Milwaukee Wis..... 4
Niles Iron Co., Niles, O..... 6
New Haven Rolling Mill Co., New Haven, Ct..... 6
Old Dominion Iron and Nail Works Co., Richmond, Va..... 6
Oxford Iron Co., 81 Washington N. Y..... 4
Phœnix Iron Co., 410 Walnut, Phila..... 6
Rowland, Wm. & H rvey, Phila..... 32
Iron, Hoop, *Manufacturers of.*
Wm. Clark & Co., Pittsburgh, Pa..... 4
Japans and Brunswick Black.
London Mfg. Co., 246 Grand, N. Y..... 20
Iron, Sheet, *Manufacturers of.*
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Iron, Swedish, *Importers of.*
Jessop Wm. & Sons, 91 and 93 John, N. Y..... 28
Mitander Nils, 69 William, N. Y..... 4
Page Ewd. & Co., Boston, N. Y. and Phila..... 4
Lace Leather, *Manufacturers of.*
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Chadborn & Coldwell Mfg. Co., Newburgh, N. Y. 25
Hill's Archimedean Lawn Mower Co., Hartford, Ct..... 25
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Colwell, Shaw & W. Mfg. Co., 213 Centre, N. Y. 2
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Tower Daniel L., Elizabethport, N. J..... 6
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Crane U. O., 104 John, N. Y..... 2
Harnickell Max, 85 Beaver, N. Y..... 2
Phelps, Dodge & Co., Cliff, N. Y..... 2
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Britton J. Blodgett, 339 Walnut, Phila.....14
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Am Rolled Nut & Tube Co., Richmond, Va.....14
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Sandusky Tool Co., Sandusky, O.....26
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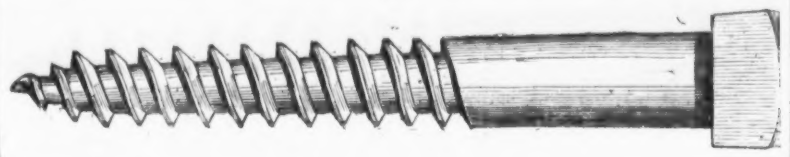
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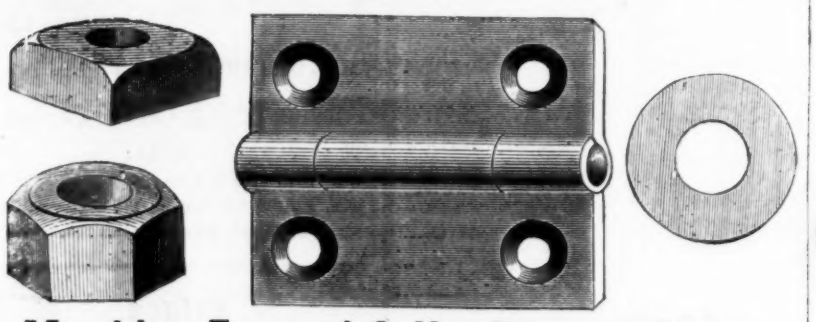
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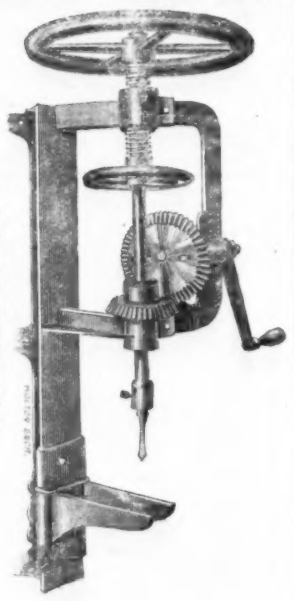
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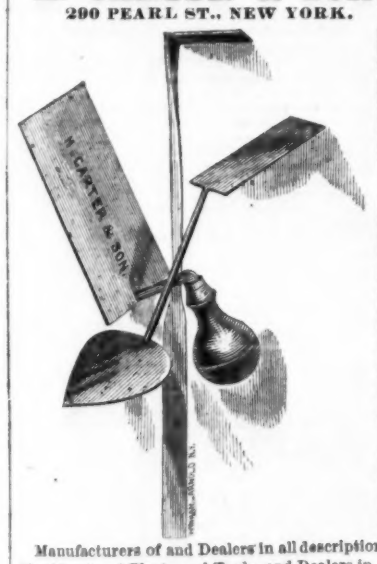
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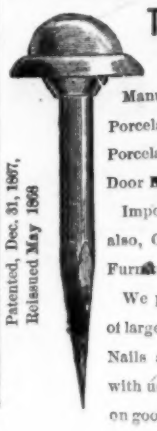
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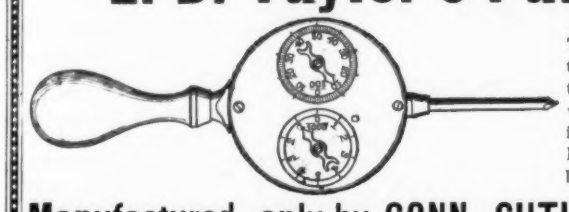
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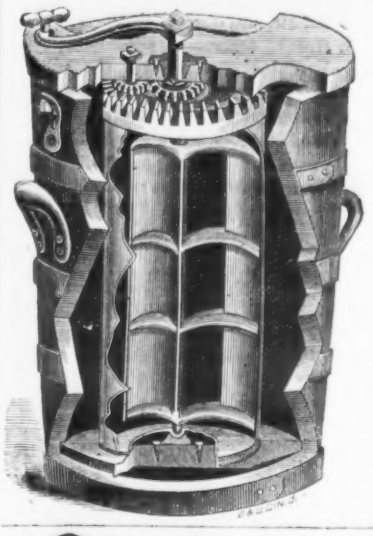




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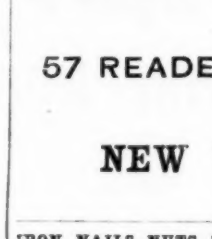
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New York, Thursday, March 20, 1873.

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REMOVAL.

On or about April 1st the Office of

The Iron Age

will be removed from 80 Beekman Street to

10 Warren St.,

New York, three doors from Broadway.

Steam on the Canals.—Mr. Green's Report.

The Report of Mr. D. M. Green, Engineer of the Board of Commissioners appointed to superintend the trials of steam upon the Erie Canal, has been made public. We have not space to review it in detail, and as its history of trials made up to the close of navigation last year is less valuable than that lately published in these columns, it is unnecessary for us to do so. His conclusions, however, are interesting: "(1) "The practicability of substituting steam "for animal power on the canals is abun "dantly demonstrated; (2) an average speed "of three miles per hour, including lock- "ages, may be attained, which would carry "a boat from Buffalo to Albany in five "days instead of ten or twelve days, the "time now consumed in the passage; (3) "by the substitution of steam the tonnage "of the canal may be largely increased— "the greater speed at which boats would "move would relieve the Erie Canal of the "crowd which at times increases the dif- "ficulty of its navigation; (4) a saving of "50 per cent., exclusive of tolls, may be "made in the cost of transportation by the "substitution of steam for animal power; "and (5), all things considered, the cheap- "est and most convenient mode of employ- "ing steam is in boats carrying their own "machinery, and not in the use of tow- "boats."

To any one who has given the subject of the movement of canal boats by steam intelligent and careful study from a commercial standpoint, it will be evident that the 1st, 3d, 4th and 5th conclusions reached by Mr. Green, cannot be sustained, and that he does not comprehend the subject of which his report treats. To say, for example, that the cheapest and most convenient mode of moving boats is by means of independent propelling machinery for each boat is nonsense, unless it be demonstrated—which it has not been—that boats cannot be towed in trains by tugs. As well might it be argued that an economy would result in railroad operations from putting an engine in, and a pair of driving wheels under, each freight car, and dispensing with locomotives. What we want upon the canal is some system of traction that will do for barges afloat what the locomotives does for freight cars on land—draw them fully freighted in trains of five or seven, at a greater speed and at a less cost than they can be drawn singly by horses. Until this is done steam cannot be mechanically and commercially adapted to the movement of canal tonnage. To rebuild the 7000 boats plying on our State canals, equip each one with an engine, and provide it with an engineer and assistant, would involve an expenditure the interest upon which would exceed the present total cost of tonnage by horses, leaving the boats in debt at the end of the first season for the entire cost of their movement by steam. We must take the tonnage of the canal as we find it, not as it could be made by an expenditure of some forty or fifty millions of dollars, and it is certainly a matter of surprise that Mr. Green should have reached conclusions so far from correct, considered from either a commercial or a common sense stand-point. Mr. Green either does not know, or has forgotten, that a greater economy was established with steam in 1861 and 1862, as compared with horses, than has been established by any boats tested under his official supervision, and that our progress since 1862 has been a progress backward. The difficulty then encountered, and which still exists, was in establishing an economy for steam over horses. The loss of from 40 to 44 tons of cargo per trip, and the expenses of a steamboat when lying still as compared with a horse boat, are sufficient to seal the doom of steam propulsion on the plan which receives Mr. Green's official approval, and unless the movement of boats can be effected by means other than the introduction of propelling machinery into each, the State had better keep the promised bounty of $100,000 in its not over full Treasury.

Progress in Telegraph Construction and Operation.

The year 1872 witnessed a progress in the extension of submarine telegraph lines which, considering the rapid growth of the system in the two years preceding, and the fact that the most widely separated Continents were brought into electric communication before the close of 1871, is certainly remarkable. The most important of the enterprises completed last year is the continuation of the India and China line to Australia, since supplemented by the completion of a land line 200 miles long from Port Darwin to Port Augusta. In the East the telegraph system has been extended in several directions by the completion of new lines in Japan under the patronage of the Mikado, by English engineers and electricians; also in Russian Asia, and especially in South America, where the progress has been so rapid and extended that it is difficult to keep trace of it and tell what has already been accomplished. Several important lines have been added to the West Indian system, including an extension from Jamaica to Colon, and a duplicate cable from Havana to Key West. Extensive and costly repairs have been made to the Atlantic cables, and an additional line was successfully laid between Placentia and Sydney, 300 miles.

Of the enterprises in hand the most important is the laying of the new line for the French Atlantic Cable Company, which is now nearly completed and in great part coiled on board the Great Eastern. It will be laid to Halifax and thence to New York, a distance of 3616 miles. Several other lines are in progress of construction, including a cable to be laid from Lands End to New York, via Bermuda, with a branch 1000 miles long to St. Thomas, and many enterprises of less importance are proposed, chiefly by British Capitalists.

In the improvement of telegraphic apparatus, and in the invention of new and economical methods of working lines, the past twelve months have witnessed an important progress, especially in the matter of duplex working, or the transmission of messages both ways simultaneously on one line. In this country, as well as in Europe, the system has been practically tested with good results, and as it very nearly doubles the capacity of each wire it secures an economy which is said to more than offset the comparatively small percentage of increase in working expenses. Through the medium of telegraphic societies and journals devoted especially to this important subject, a fuller and freer exchange of ideas and experiences is secured between electricians and skilled operators, and many important and valuable contributions to electrical science has thus been secured and brought prominently to the notice of those interested. There are still important discoveries and applications to be made, especially in the economical adaption of the principle of the telegraph to the use of manufacturers, merchants and others, to whom some simple means of rapid communication between distant points, or from one part of a large building to another, would be very useful. The instruments now made for that purpose are, so far as we have seen them, too complicated and delicate, and require too much care and skill in their manipulation to meet the want which has so long been felt, but we have no doubt that it is within the possibilities of telegraphy to make an instrument which will transmit a written message and record it *fac simile* at the other end of the line. We have seen an instrument designed for this purpose which was almost a success, and what it lacked of completeness may yet be supplied.

The American Institute Library.

A few weeks ago the reform battle in the American Institute was firmly fought on both sides, and the "Reformers" were beaten two to one. Nobody was surprised at this, for the "Regulars" had been in power for years, had denied their opponents access to the lists of members, and had used both personal and official influence to rally their friends to the polls. The "Reformers," on the other hand, had a six weeks' organization and, without means of reaching members through circulars addressed from the lists which the "Regulars" employed for that purpose, had to depend wholly upon their public meetings and the scattering fire of individual enthusiasm. The "Reformers," therefore, may be readily believed when they say that they are not discouraged, nor even fairly beaten, and they are organizing a permanent association, with the avowed object of forcing the party in power either to adopt reform measures or vacate office. They claim that the new by-laws were illegally passed, and are wholly invalid, so that the present management can give no good title to property in case of sale; that the fairs are improperly managed; and that the library, which was reported by the library committee, seven years ago, as containing about 10,000 volumes, was reported by the same committee as containing only the same number at the monthly meeting held in January last—no accretions of any consequences having been made during the long term of seven years.

We have had occasion to refer to this matter of the library before, and that our comments were not without weight is evident from the fact that the managers of the institute have since cleared out that portion of the rooms hitherto devoted to the storage of empty boxes and other trash, and have set a clerk to work preparing a catalogue, the first in fifteen years. So far so good. The catalogue will be of immediate use in enabling them to see what books they have; what books they have not is evident to the most casual observer who will visit the rooms. The library is rich in books published from ten to sixty years ago, and these should, of course, be carefully preserved; but not one in a hundred of the standard works on science, art and industry published during the last decade, can be found on the shelves. There is need of 2000 volumes more to make the library what it should be, and these should be furnished at once, in time to be included in the new catalogue. There is no excuse for remissness in this respect. The Institute has ample funds, and the present rooms, by a proper arrangement of bookcases, will afford space enough, and to spare, for more than the number mentioned.

We have reason to believe that some of the most active of those in opposition to the present management have been led to it more by disgust at the shabby condition of the library than by anything else. Every scientific man in the city has a direct interest in the prosperity of this branch of the Institute, and to render it the most complete collection of technical and scientific books in New York is a duty the trustees and library committee owe to themselves, the scientists and engineers forming a large part of the membership, and to the public at large, which believes that a society organized for the promotion of useful knowledge should at least place before its members the means of acquiring such knowledge. Thorough work in this direction will go far to cool the bad blood engendered by the pending strife, and, we are safe in saying, neglect to concede the just demands of a strong and earnest minority will, sooner or later, result not only in the discomfiture of the powers that be, but in direct injury to the Institute itself.

The Law of Trade Marks.

The issues of suits brought to protect trade marks or copyrights, or to recover damages for their infringement, are always awaited with interest by manufacturers, as defining their rights under common and statute law to the exclusive use of the designations, patterns or distinctive features by which their goods are known to the trade and the public. In theory, at least, the law affords protection against infringement of trade marks, but in the practice of our Courts this protection has been very unequally extended to manufacturers, since it is difficult to establish the fact of infringement when there is no exact or *fac simile* imitation of the trade mark, copyright, pattern or distinguishing characteristic of goods which others are made to generally resemble. In this country, even more than in Europe, it has been comparatively easy to evade the law by observing its strict letter while openly and intentionally violating its intent. There has been a want of harmony in the rulings of the Courts in different States, and it has often happened that goods bearing trade marks declared to be illegal infringements in one State, have been legally marketable in another, where suit had not been brought, or where a different decision had been reached by the courts.

There is reason to believe, however, that manufacturers will suffer less inconvenience from this cause in future than in the past. Some time ago suit was brought by the Gorham Manufacturing Company to prevent the imitation of designs used by them for the handles of spoons and forks, and sold by them under a distinctive name registered as a trade mark. The defendants in the suit, which was carried to the Supreme Court of the United States, did not deny that their goods bore a general resemblance to the goods made by the Gorham Company, but claimed that they were not *fac simile* imitations and did not infringe upon the rights of the plaintiffs. It was proved, however, that the goods were calculated to deceive all but experts, and upon this evidence the Court, following the English and French practice, decided that deceptive imitation was an infringement, and granted the suit to the plaintiffs. This decision, affirmed by Judge Strong, covers a great many pending cases, and will be viewed with satisfaction by manufacturers whose trade marks, patterns and designations it has been found so difficult to protect.

Statistical Report of the National Iron Manufacturers' Association.

We have received, through the courtesy of Mr. Thomas Dunlap, Secretary, a copy of the Statistical Report of the National Association of Iron Manufacturers for 1872, which merits more than a passing notice. As a contribution to the statistical literature of the year, it is of unusual interest and value. It is a work of more than 250 pages, beautifully printed, and showing taste and judgment in its arrangement and classification. Mr. Dunlap, the compiler, seems to have entered upon the work with a determination to make it thorough and comprehensive, and it will be admitted by the most casual reader that he has covered a wide range of statistics, and made a volume which is worthy of the long and patient labor which he has devoted to its preparation.

We regret that, in the present crowded state of our columns, we have not space to reproduce such interesting portions of the report as relate to subjects not already presented in detail in these columns. The volume is too large, however, for us to hope that an opportunity will present itself to lay any considerable part of its contents before our readers, most of whom will find the work a valuable accession to their libraries of books of reference. The work includes a review of the trade and the progress of the iron industries of the United States for 1872; our imports of foreign iron; statistics of shipbuilding and labor; review of the growth of iron manufacture in the United States from 1793 to date; the condition of trade and production abroad; ore production in 1872, and a mass of valuable standard statistics and useful technical information. The liberality of the Association in incurring the expense of publishing so large a book for general circulation, is certainly worthy of imitation by manufacturers' associations in other trades; and Mr. Dunlap is entitled to the thanks of the press and public for the able and intelligent manner in which he has discharged the duty of compiling, tabulating, and, so far as possible, verifying, the hitherto scattered and almost inaccessible statistics of our iron industries.

Scientific and Technical Notes.

THE GASES PRODUCED IN DISSOLVING PIG IRON.

On dissolving pig iron in muriatic or sulphuric acid no pure hydrogen is obtained, but it is always contaminated with various gaseous and liquid hydrocarbons of disagreeable odor. If these are conveyed through alcohol or concentrated oil of vitrol, an oil of noxious smell is absorbed, which separates again on diluting it with water. It was examined by Proust, Schrotter, Kastner, Schafhaute, and recently again by Hahn. According to the latter, it is colorless when pure, lighter than water, very liquid and not congealing, at 20 deg. C. Exposed to the air it grows yellow, common sulphuric acid decomposes it gradually, and fuming sulphuric acid immediately. It distills from 100 deg. C. to 300 deg C., by leaving a thick fluid behind. The gaseous and liquid products which are generated so abundantly from white pig, belong especially to the ethylen series (C_{2n} H_{2n}) beside they contain peculiar bodies resembling the etherial vegetable oils (C_{20} H_{16}). Resinified, they remain in the carbonaceous remnant on dissolving pig. There has also been discovered a substance similar to mercaptan.

BUILDING STONE AND FIRE.

In a paper recently read before the Polytechnic Club, of the American Institute, of New York, Dr. Adolph Ott stated that limestones containing magnesia, or as they are termed "dolomitic limestones," are even less fit for building materials than ordinary limestones, which, as we know, stood the heat worse in the extensive conflagations in Chicago and Boston. As our Westchester and also Vermont marble is a dolomitic limestone, this fact is of very great interest for this city. It is furthermore stated that the various sandstones stood the heat best, owing to the fact that their predominant ingredient is quartz, a substance well known for its infusibility. Dr. Ott explains also why granite, gneiss, micaslate and other rocks, belonging to the primary formation, readily crack and explode, even when only exposed to the radiant heat of neighboring buildings. This is due to the moisture they contain in their interior, a fact well known to quarrymen. Regarding the artificial Portland cement stone, now coming so largely into use, we possess in it a material in every respect suitable for building purposes. Being a compound of silicate of lime and alumina, it will stand heat almost if not quite as well as sandstone.

ON THE USE OF STEEL FOR BOILERS.

From a late number of the *Deutsche Industrie Zeitung* we learn that Mr. R. L. Haswell, Engineer of the Austrian State Railway Co., spoke on this subject in the Society of Austrian Engineers. He remarked that the accidents which had occurred on railways using locomotive boilers of steel had thus far been only ascribed to the material; yet this was due, on the one hand, to the preparatory working of the plates, and on the other, to the small thickness, as well as to the insufficient mode of assorting them before they were used. The State Railway thus far has used about 50,000 hdw. steel plates, among which only 200 hdw. were thrown aside during the manufacture of the boilers. Haswell only knows of five instances where such boilers got cracks, four of which occurred in the fire-box plate and one in the cylindrical part. Haswell ascribes their faulty condition to the fact that they were rolled when too warm. This shows that even by purchasing steel plates from the most renowned establishments and of the best quality, one cannot depend on their superiority for the purpose in question, without assorting them with the utmost care, because it can readily occur that in heating the plates one or more get spoiled. Hence, in the establishments of the State railway all plates are subjected to tests for their tensile strength, before they are used. That these tests are perfectly reliable is shown by the fact that of 350 boilers consisting of steel plate, only a single one was found torn thus far, and this in the cylindrical part. The box plates not having been tested, it is readily explained that four boilers were injured in those parts. But, although these plates had undoubtedly been impaired in their strength by over-heating, they would probably not have been torn if the construction of the machines, namely, the boiler supports, did not involve an immense strength. In order to obtain steel boilers answering all requirements, only correspondingly thick plates and plates of the best material, without any addition (for otherwise the steel is not homogeneous) ought to be used; they ought to be scrupulously assorted according to the texture and tensile strength. After boring or punching they should be carefully annealed, the riveting must be performed with pedantic care, and the bending only with wooden hammers. That steel plates manufactured in Austria are of excellent quality, is proven by the manner how boilers are there constructed, the box front plate, down cover, and the sides of the tubes are only furnished with an edge or border, while in England they are compelled to use angle iron for these connections. Steel plates are preferable to iron plates, owing to the fact that they possess the same degree of elasticity in all directions (from 12 to 15 per cent.); in iron plates it is in the direction of the fibres, according to Kirkaldy, about 15 per cent., but in a cross direction only 5 per cent. If one proceeds in the manner indicated, says Haswell, steel plates may be used with perfect safety. The boiler manufacturer has the advantage that he finds less plates to throw aside, and the railways on the other hand will have more carefully constructed, stronger and, in the end, cheaper boilers.

Mr. M. H. Cauderay, of Lausanne, describes the construction of an

IMPROVED GALVANIC BATTERY,

which is small, easily portable and economical, and particularly useful for purposes of military telegraphy. The cells, which serve at the same time as the positive electromotors, consist of the used copper cases of rifle cartridges. These are scraped clean, and arranged in holes made in a small board. They are then charged with a layer of about half an inch of pounded and moistened sulphate of copper, and filled up nearly to the top with sawdust soaked in pure water. The negative electro-motor is a small cylinder of zinc, about an eighth of an inch thick, which is passed down into the sawdust

through a hole in a varnished cork, closing the aperture of the cell. A small notch must be made in one side of the cork, to allow of the escape of gas. Of course the copper cell and the zinc cylinder must have wires attached to them, for the purpose of attaching them to the opposite poles of the neighboring cells. A battery of twenty such cells, exhibited by M. Cauderay to the Society of Sciences at Lausanne, sufficed to work a portable military telegraph against a resistance of 4000 Siemens units. The knowledge of so cheap a form of battery will be welcome to many who like to amuse themselves with experiments in galvanism.

Mr. Casson, of Earl Dudley's Round Oak Iron Works, has invented and put in operation an

IMPROVED PUDDLING FURNACE,

by which it is stated that, beside effecting a considerable reduction in the quantity of fuel used, more iron, and that of a better quality, is got out in a given period. The furnace is not a great alteration upon the ordinary puddling furnace. Almost the only change is that the old furnace has attached to it a heating chamber. This chamber is placed between the stack and the fire-bridges of the ordinary furnace. The pigs, instead of being thrown through the puddler's door into the furnace direct, are pitched through a separate and smaller door made for the purpose into the heating chamber, through which the flames from the furnace pass on their way to the stack. After the first heat the puddling furnace is kept supplied by the pigs which lie heated in the chamber. There are reverberating bricks between the chamber and the stack on the one hand, and between the chamber and the furnace on the other. By means of these bricks the heat in the chamber can be regulated. With this furnace eight heats can be got out in the time usually consumed in the getting out of six heats in a furnace having no heating chamber. The results obtained from the first day's trial of the new furnace, when eight heats were worked, was as follows:

	Cwt.	qr.	lb.
No. 1 heat	3	1	25
No. 2 "	3	3	20
No. 3 "	3	3	5
No. 4 "	4	0	0
No. 5 "	3	3	20
No. 6 "	4	0	0
No. 7 "	3	3	15
No. 8 "	3	3	20

Total for the eight heats, 1 ton 10 cwt. 3 qr. 21 lb.

This does not include two scrap balls made upon the same occasion. This, it will be seen, is a much larger yield than is usually obtained under the old system. What the old system would have produced throughout the eight heats may be pretty much inferred from the character of the first heat, which did not receive the benefit of the chamber. Not only is the yield greater, but, by the increased purity of the iron passed through the heating chamber into the furnace, the quality of iron when puddled is higher than if the pig were thrown cold into the furnace. The saving of fuel is estimated to be from 10 cwt. to 13 cwt. per ton of iron produced. Against all these advantages is to be set the cost of the chamber, which is comparatively little, together with the higher wages which at present have to be paid to the ironworkers.

Mr. John M. Stanley, of Sheffield, has lately brought out an invention by means of which he proposes to effect an important

ECONOMY OF FUEL IN HEATING FURNACES.

By a simple arrangement of chambers, through which steam is passed into the furnaces, to the grates of which there are solid bottoms, and not the ordinary bars, the fuel used is subjected to something like complete combustion. The furnace has been submitted to the test of experience by steel and iron firms in Yorkshire and elsewhere; but the prevailing dearness and scarcity of fuel has greatly stimulated the application of it to furnaces in that and other parts of the kingdom. Two firms are using it here with great success. They are Messrs. Isaac Jenks & Sons, of the Minerva Iron and Steel Works, Wolverhampton, and Messrs. Brotherton & Co., tube makers, of the same town. The first named firm have just determined to apply it to three more of their furnaces, and Mr. Brotherton speaks in the highest terms of the invention. It has been adopted at Millwall, and it is likely to be used at the Woolwich Arsenal. An experiment just made at the Bolton Steel and Iron Company's works shows that one furnace consumed in a month under the old system 17 tons 15 cwt. of fuel in the heating of 159 tons 16 cwt. of steel, whilst in the furnaces possessing Stanley's chambers 203 tons 17 cwt. of steel was heated by 16 tons 13 cwt. of fuel. So complete is the combustion that the residuum of ashes under the new system is hardly one-eighth of that under the old. This reduction in the ashes is a very remarkable feature which accompanies the use of these steam chambers.

Mine Improvement.

BY JAMES A. WHITNEY, M. E.

Few American industries are likely to show greater expansion during the next twenty years than those resting immediately upon mining, whether of coal, iron or precious metals. The first of these will, doubtless, call into being more mechanical contrivances than either of the others; the second, processes, properly so-called, but relating more to the treatment of the ore as it leaves the pit's mouth, than to operations in the drifts; the third, chemical processes also, but of a character more refined than in other departments of metallurgy; the great problem in this line being to extract silver from quartz having less than $25 to the ton. The present article is designed merely to place before the eyes of ingenious readers suggestions that have come to me, either from inspection of mining operations or from facts gathered from widely scattered and comparatively inaccessible printed sources of information. It will relate in the main to coal, for this is of the most immediate importance to industrial interests, and has been the subject alike of the most useful ingenuity and the most fruitless invention; some of the latter, however, requiring only fair mechanical judgment to make it of the first utility.

It is well known that the safety lamp, while it rendered safe coal mining possible, failed to guard against the greatest of all dangers, that of the carelessness of the workman himself. Hence, arose the numerous modifications, some designed to extinguish the lamp before the heating of the wire gauze to incandescence, a system somewhat of the *reductio ad absurdum* order, others to sound through magnetic wires an alarm on the surface, whereupon the men might be called from the dangerous locality by proper exercise of authority. But, perhaps, one of the most ingenious of means for preventing fire-damp casualities lies in the application of electricity, proposed in England a few years since, and involving almost the same modus operandi as the electrical gas lighting devices used in one or two places of amusement in this city, and, also, I believe, in the capital at Washington, viz., the heating of a wire to a red heat by a retarded current. In this plan a wire, corresponding to a telegraph wire, is to be laid through the dangerous places with the diameter diminished at short intervals, and before the entrance to the latter, of the men, a current is to be sent through the wire; the sudden heating of the diminished part, of course igniting and exploding any explosive gases that may be present while yet the operatives are at a safe distance. I am not aware that this has ever been put in practice, but it has a feasible look, and, if successful, would save the lives of thousands of colliers. There is one other way, albeit probably a difficult one, of avoiding fire-damp explosions from the light carried by miners; this is the use of illuminating apparatus surrounded by glass hertmetical to the surrounding atmosphere, but communicating by an air pipe with the upper air, and furnished with a pipe outlet for the escaping products of combustion. This is substantially Bessemer's plan of mine illumination, in which "combustion under pressure was to be used," the air being kept at a greater than atmospheric pressure by suitable compressing devices. I was led, on first reading an account of this invention, to suggest in place of it the use of an ordinary gas flame, supplied with pure oxygen (now manufactured in large quantities by Tessier du Motay's method) under greater or less pressure. But whether this has the elements of decided utility, or is merely the plausible guess of an engineer, I do not pretend to say; for I have not taken sufficient interest in the notion to elaborate the calculations necessary to a reliable theory, and willingly hand over the idea to any one who chooses to put it in practice.

Of more common occurrence than fire-damp, and in this country the cause of greater danger, is choke-damp, carbonic acid gas, the *geist* or ghost that choked the miners of the Hartz in old times. For this no efficient remedy other than thorough ventilation exists, but the deadly gas can, by delicate but, theoretically at least, reliable means, be made to vindicate its own presence. The only published account of which I am aware of a device for this purpose describes a vessel filled with lime water and supported on the one arm of a delicately balanced lever; this last connected by suitable means with an alarm at any desired point. The absorbtion of the carbonic acid, when the latter is present in large quantities, by the lime water, increases the weight of the latter, and when this has reached a certain limit, the lever tilts and the alarm is sounded. It would be well, perhaps, if some appliance of this kind were transferred to the unventilated public halls of New York City, to indicate that stage at which the burning of scores of gas-jets and the breathing of hundreds of human beings has rendered the air unfit for respiration.

I have spoken of mine ventilation, and there is nothing in which greater reform is needed, or in which greater obstacles in the matter of expense exist. I was forcibly reminded of this in the Nevada mines, where five-inch pipe sometimes conducts to a slope only a breath of air, faintly felt by the hand held over its open end; and this, too, while strong engines at the surface were driving the blowers. Much is lost, undoubtedly, from friction in the pipes, and this might, in a measure, be obviated by some internal glaze, which would tend, as well, to keep them from corrosion. But I am disposed to think that a system of vertical cones, sunk as artesian wells are sunk, and communicating with different parts of a mine would materially aid ventilation by the natural up-draught. This latter might, on occasion, be aided by fires in flues at the surface. But the method of ventilation by a fire in the shaft is reprehensible from its danger, and the calamity of Avondale should put it out of fashion for good and all. I have spoken in previous articles of the desirability of using compressed air for working drilling machinery under ground, not alone because of its utility in the saving of power, but also for its refrigerating and ventilating effects, especially at great depths. The prospective practice of British coal mine owners of using this means in the operation of "coal getting" machinery will doubtless come into vogue here as soon as its economy is fully demonstrated abroad although its introduction may meet with some obstruction from the jar it is almost sure to give to the views of operatives in "the labor question."

As each pound weight pushed along a drift or drawn up a shaft represents a certain amount of power consumed, it is desirable that the vehicle containing the material should be as light as possible, consistent with strength and durability. In the silver mines at Washoe the cars are drawn up bodily 1100 feet and dumped at the surface; in the Cinnabar mine, of New Almaden, Cal., the ore is dumped into an immense bucket at the bottom of the shaft, drawn up and automatically dumped into a receiver, from which, through a chute, it is conducted at will to the cars that take it to the sorting shed. I think that a decided economy of power is obtained by this latter method, but have no idea that it will be generally adopted in preference to the other; for this last the iron cars which, during the past ten years, have superseded wooden ones, will doubtless be before long succeeded by those of steel, which will give a minimum of weight with the greatest obtainable degree of durability and strength.

Mr. Brogden, M. P., on the Coal Question.

Addressing his workmen, after the arrangements as to the resumption of work had been agreed to, Mr. Brogden said: We have now what has been called a coal famine, and a most serious thing it is, not only to the commercial part of the community, but ultimately to the industrial section of those men who receive daily wages for their daily toil. The high price of coal has positively put a limitation on all other industries, and embarrassed several departments of commerce, punishing most severely those people who have to live upon their fixed incomes. Now, you may ask, "What has the price of coals to do with our wages? We don't receive anything like the amount of pay for getting a ton of coal that is proportionate to the price at which it is sold." Well, that is perfectly true; but you may carry the argument, such as it is, still further, and say the coalmaster does not get anything like the amount at which coal is sold and quoted in regular market prices, for a colliery proprietor is obliged to have his contracts and to make his arrangements some time beforehand; and he finds himself in this condition, that he is delivering coal at a very much lower price than that at which it is sold to the consumer. I could speak for a long time on this subject, but I am anxious at once to come to the practical point, as it applies to you colliers. The fact is, the industries of the country have developed themselves largely; but although it is undoubtedly true that the rise in the price of coal during the last year has been slightly in excess of the general increase, as compared with the previous year, yet the yield has been by no means proportioned to the augmented demand. The consequence has been that the trade so far as the selling of coal is concerned, has got into the hands of speculators; and they, dealing with comparatively small quantities, have raised the prices to such a degree that it has become a great difficulty for many people to satisfy their individual wants. I am speaking to you, and, through the Press, to the whole trade; and I urge the collier, in the present difficulty, to assist in remedying this evil. He can do it without any great strain on his physical strength; he can do it with considerable gain to his own pocket; and in acquiescing in so reasonable a request he will satisfy a great national want and avert a great national calamity, such as the stopping of other industries would cause. A large shipowner told me the other day that his coal bill for the last year was £20,000 more than on the previous year, and consequently he could not keep his steamers going, and twelve of these were now lying in dock doing nothing. Another person, a large printer, told me that his coal bill for the last year was £15,000 more than on the previous year, and the consequence was he intended to reduce his establishment to one-half. A gentleman in the cotton trade told me a similar story, remarking that he would be compelled to take a like course. Now, speaking to you colliers, I will ask, what does all that mean? The collier may say he holds the key to the position, and can regulate the industries of this great country; but in so "regulating" them he is destroying them; and in destroying them he is bringing poverty and distress among his fellow workmen in other branches of trade, and is bringing about a collapse in the prosperity of this country that in the end would be more marked than the prosperity we have hitherto attained. Therefore I wish to urge on all persons who have influence over the colliers a necessity of performing a public duty at the present time, and increasing the quantity of the output of fuel, so as to supply the necessities of all branches of industry.

Work on the Detroit River tunnel, is progressing slowly. The workmen are troubled somewhat by the presence of gas and occasional fissures in the clay of quicksand, more particularly so on the Canadian side. Two shafts have been sunk, each to the depth of 110 feet, one on the American side, and the other on the Canadian. The distance between the shafts is 3275 feet, but the main tunnel, when completed, will be about twice that distance. The drainage tunnel, when completed, will connect these shafts. It is below the main tunnel, except at the center, where the level of both is nearly the same, allowing the difference for the drainage, so that the track will never be submerged, even should the drainage tunnel become full of water. It is five feet in hight. The drift (drainage tunnel) on the Candian shore extends 375 feet, and on the American shore 1210 feet.

Special Notices.

Wanted.

By a Boston Hardware House occupying a leading position as manufacturers of, and dealers in, Builders' Hardware, a first-class man, to solicit trade among Builders and Architects in and about Boston, and throughout New England. Must be a person having some mechanical ideas, of good taste and good personal address, and to such a person permanent employment and liberal pay are offered. All communications strictly confidential, and must have full name and address of applicants. Address Box 1073, P. O., BOSTON.

Wanted,

A situation as Salesman, assistant Bookkeeper, Entry or Shipping Clerk. Have been in the Hardware Business, and can influence some out of town trade.

Address Box 232, PEEKSKILL, N. Y.

To Manufacturers.—The Board of Trade of Monongahela City, Pa., on the Monongahela River, invites correspondence and visits from Capitalists seeking a favorable manufacturing site. Railroad and River Transportation; Coal abundant and cheap. Address D. C. SHAW, Secretary Board of Trade, MONONGAHELA CITY, PA.

To Malleable Iron Manufacturers.

CAUTION—YOU ARE HEREBY WARNED against making Coke Screening Shovels, either in whole or in part, of Malleable Iron, for any other parties than myself, as it is an infringement of Butler's Patent of June 4th, 1872.

O. R. BUTLER, Patentee,
96 Maiden Lane, New York.

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R. T. HAZELL, AUCTIONEER.

By R. T. Hazell & Co.,

Store No. 118 Chambers Street.

Our REGULAR SALES of HARDWARE, CUTLERY, FANCY GOODS, &c., will be held on TUESDAYS and FRIDAYS throughout the season.

CASH ADVANCES made on CONSIGNMENTS without additional charge.

To Manufacturers.

The advertiser is going into business ere long, and will thank manufacturers of

Stoves, Lamps, Plated Ware, Safes, Refrigerators and General Housefurnishing Hardware to forward their Catalogues and Price Lists at once.

A. REID, Buffalo, N. Y.

To Iron Masters, Mill Owners and Others.

Wants, by a practical man, a situation as foreman of bricklayers, either in the erection or repairing of Iron and Steel Works.

Address X. Y. Z., Post Office, JOLIET ILL.

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Amongst all good standing Hardware Dealers throughout the United States, *payment for advertisements being required only upon proof of fulfillment of our Contract. Will be published about February.*

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The public are warned against paying money in advance for the insertion of advertisements, or other matter in works published by us.

The Merchants and Manufacturers Agency,
4 Warren Street, N. Y

For Sale, &c.

Charcoal Pig Iron Furnace Property at Franconia, N. H., FOR SALE.

This must be, considering the proximity of Wood and the known character of the Ore, the most valuable Charcoal Furnace Property that can ever come into market. It consists of the celebrated Franconia Iron Ore Bed and ore reservations in about 3600 acres in outlying lots, beside about 3000 acres of valuable wild land. Charcoal Blast Furnace in perfect order, Shops, Dwelling Houses, Store, &c., &c.

It is offered for sale because the owners do not want the care of running it, and are reluctant to have it lie idle with the present and prospective demand for its product. It will be sold at a price and on terms that will give the buyer an opportunity not often to be met with.

The attention of users of Charcoal Iron who wish to establish their source of supply is directed to this property. Address *WM. E. COFFIN & CO., Boston, Mass.*

Hardware Store & Stock For Sale.

In the village of Medina, Orleans Co., New York. The stock is very fine and in perfect order, and amounting to about $12,000. The business is well established, and is a desirable opportunity for any person wishing to engage in the Hardware Trade.

Liberal terms will be given for payment.

Applications must be made at once to

C. D. AVERY, Agent, Medina, N. Y.

For Sale.

Very desirable and valuable leases by the Receiver of the Chamberlain Mfg. Co., of Buffalo, N. Y.

Brick Building, 93x75 feet, four stories, large, high and well lighted. Best location for a manufacturing business in Buffalo. Water and gas, ample arches and cellars; also convenient yard room. Length of lease, fourteen (14) years. Above offer open for two (2) weeks. Address.

SHELDON T. VIELE, Receiver,
Buffalo, N. Y.

For Sale or To Let.

The Stove Foundry lately occupied by Munsell & Thompson, situated at Elizabethport, N. J.: can be adapted to any manufacturing purpose, having coal and iron within one block, direct from the mines. Communication with New York 32 times a day by rail, and 4 times by steamboat. Within half a block of the river. Will be let for one or more terms of years. Apply to or address

A. BAIZ & CO.,
32 Broadway, N. Y.

New York Rolling Mill,

444 West 46th Street, N. Y.

To be sold: The working plant of the above Mill, consisting of Corliss Steam Engine, 90 H. P. (with Fly Wheel about 20,000 lbs.); Boilers; Rolls for 14 in. Train; 9 in. Train, 3 high, complete; Shears, Sturtevant Blower, Turning Tools for Lathe, &c.

For further particulars apply on the premises, or to WILLIAM JESSOP & SONS, 91 John Street, N. Y.

FOR SALE.

The Napanoch Blast Furnace, Ulster Co., N. Y. Splendid water power. Charcoal and Anthracite Coal in abundance, cheap. Apply to **H. Bange,** 34 Tompkins Place, BROOKLYN, N. Y.

Rolling Mills For Sale or Lease.

The *"CALVERT ROLLING MILLS,"* situated in the city of Baltimore, were withdrawn from the sale advertised on the 16th of May, and are now offered at private sale, or will be leased to responsible parties. The terms will be made advantageous. The Mills are in perfect order, and can be put in operation at short notice.

For full information address

ALEX. BROWN & SONS, BALTIMORE.

For Sale, &c.

For Sale

By the undersigned. Sealed bids, accompanied with a good bond as surety for the fulfillment of the bid in case the same should be accepted, will be received until April 1st, 1873, for the following described property:

The works of the Greenwood Scythe Co., situated at New Hartford, Conn., on the New Haven and Northampton and Conn. Western R. R., the latter within 100 feet of the works, and it is expected will soon have connection with the Poughkeepsie and Eastern at Millerton, so that coal can be transported at a very low price. The buildings consist of a Hammer Shop, 90x68 feet, and has three complete sets of Hammers; a Grinding House, 120x24 feet, with ten run of stones, with new spindles and all the tools for handling, etc., etc.; and a polishing and paint room of sufficient size to handle twelve thousand dozen in ten working months. The Buildings were erected in 1869, and are in good order. There is a 40 inch Leffel Wheel, under 22 feet head, with good gearing, shafting and pullies, with large and small driving belts, in readiness to start at once; also an office and warehouse, 90x28 feet, three stories high, in good order, and three Dwelling Houses and a Barn.

The water power is excellent, never failing, being on the Farmington River, and below the well known Otis and West Hill Reservoirs, the latter being under the exclusive control of the company.

The Brands, Stamps, Good Will, Lables, etc. etc., of the company, such as has been in use by them since commencing business, are also included in the sale. The terms are one-third cash on delivery of deed, and the remainder in equal payments at the expiration of 30 and 60 days from the date of the deed, secured by mortgage of the property.

For further information apply to

WM. S. SEYMOUR,
E. M. CHAPIN,
S. K. PRIEST. } Committee.

New Hartford Conn.

For Sale, The Orange County Foundry and Machine Shop, MIDDLETOWN, N. Y.

Established 1842.

The most desirable property on the line of the Erie and Midland Railways. Has a large and valuable assortment of Patterns. Extensive and increasing trade, and affords parties wishing to enter the Iron Business an unusual opportunity. Satisfactory reasons given for selling.

Parties desiring to purchase are requested to call and examine, or address the undersigned,

E. P. WHEELER, Middletown, N. Y.

Fire Brick Factory.

The undersigned, being desirous of retiring from active business, offers for sale his two-third interest in the Lehigh Fire Brick Works, in Catasauqua, Pa. Everything pertaining to this establishment is in first-class condition, and the demand for the Bricks has hitherto been in excess of the capacity of the Works to supply. As the Works are situated in close contiguity to nearly fifty blast furnaces and twelve rolling mills, the demand is not likely to fall off. An active business man who can come well recommended will be dealt with liberally. Apply by letter or otherwise to

DAVID THOMAS, Catasauqua, Pa.

TO LEASE

On very reasonable terms,

A Large Factory,

On line of railway between New York and Philadelphia.

Just the Site and Building for a large Machine Business.

Main building 150x50 feet, with two wings for Foundry and Forge

A never-failing Water Power supplies the Factory with power.

Address, immediately,

FERGUSON,
89 White Street, New York.

For Sale! Hardware Business

In the city of Cleveland, Ohio. One of the finest Retail Stores in the city; stock fresh, all purchased the past two year—not ten dollars unsaleable goods in the entire stock. Good reasons for selling. Address A. B. C., office of *The Iron Age*, 80 Beekman St., N. Y.

For Sale.

A first-class Retail and Jobbing Hardware Business, which has been established for twenty-three years, in Bloomington, Ills. This city is one of the most flourishing in the West, being situated in a rich Agricultural Region, the center of numerous Railroads, and possessing the best educational facilities.

The proprietor, wishing to retire from business, on account of advanced years, offers this excellent property for sale, on easy terms—one-third down, and the balance on long time, with interest and good security. Amount of stock about fifteen thousand dollars. None except those meaning business need apply. Address *GEO. BRADNER, Bloomington, Ills.*

Rolling Mill Machinery For Sale

One train, 3 high, finishing rolls, with steam engine 75 H. P.; and balance wheel, 20,000 lbs.—complete and in good order—by

Fearing, Rodman & Swift,
23 & 25 Commercial Street, Boston.

BOSTON, Nov., 20, 1872.

HENDRYX & BARTHOLOMEW,

MANUFACTURERS OF

WIRE CLOTH,

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Locomotive Spark, Hardware Grade, Galvanized and Tinned Iron Wire Cloth. Green, Drab, Black and Landscape Wire Window Shade Cloth, Brass Milk Strainer Cloth.

☞ Special Orders will receive prompt attention.

ANSONIA, CONN,

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, March 19, 1873.

The past week has been one of much interest in Wall street, and exciting topics have been plentiful. The most noteworthy event was the exercise by the Secretary of the Treasury of the right which he claims to issue greenbacks in excess of the $356,000,000 authorized by law. Some $2,000,000 having been paid out to meet, it is alleged, the current necessities of the Treasury, which could be provided for in no other way. A part of this issue was taken in again, but the mischief was accomplished by letting them go out, and the uncertainty as to what the Secretary would do next was taken advantage of by speculators to manipulate prices. On Monday, Mr. Boutwell having been elected United States Senator from Massachusetts, resigned as Secretary of the Treasury, and Mr. Richardson, before Assistant Secretary, was nominated by the President to fill the vacancy. This change had been expected for a long time, and it was therefore without effect on Wall street, although for a few days before the nomination of Mr. Richardson hopes were entertained that a wiser selection would be made. Under Mr. Richardson's management it is doubtful if any important improvements in the Treasury policy will be deemed necessary.

Another event of great interest was the discovery that the market had been flooded with forged securities, which had been hypothecated as securities on loans, and a good part of Saturday afternoon and Monday were spent by the holders of such collaterals in looking for bogus certificates.

A careful examination by all interested in railway stocks developed the fact that the forgeries amounted to five hundred shares of Wabash and two hundred shares of the stock of the Pittsburgh, Fort Wayne and Chicago, which will involve a total loss of less than $40,000, this falling on money lenders who held the stock as collateral, none of it having been sold at the Stock Exchange. The counterfeits were very well done, in fact so perfect that the opinion was expressed that the certificates were genuine, and that they had been stolen and filled in. Neither member of the firm was at the office of the concern to-day. It is a matter of satisfaction that the fraud was discovered before it got much headway, and while the losses were small

The money market has been stringent during the week, though somewhat less so than last week. Call loans have ranged from 7 per cent. currency to ⅛ of one per cent. per day, 1-32 and interest per day have been the ruling rate. Mercantile paper has been neglected, and but few names have been discounted at 12 per cent.

The gold market has been unsettled, remaining weak until Saturday, when it suddenly became strong on a demand for gold to cover Sterling Exchange borrowed early in the year by stock operators.

The following table shows the daily range of the premium:

	Highest.	Lowest.
Thursday	115⅛	114⅞
Friday	115⅛	114⅞
Saturday	115⅛	114⅞
Monday	115⅛	115
Tuesday	115⅛	115⅛
Wednesday	115⅛	115⅛

The stock market has been irregular, but generally heavy, with the principal dealings in N. Y. Central, Pacific Mail, Western Union, Rock Island, St. Paul, and B. H. and Erie. The highest and lowest of to-day's quotations of active stocks are given below.

The bond market has sympathized with the market for gold, and closes at the quotations given below.

The following will show the movements in foreign trade for the week:

IMPORTS.

	1871.	1872.	1873.
Tot. for week	$4,383,892	$5,238,441	$5,974,593
Prev. reported	66,307,386	76,613,525	82,475,621
Since Jan 1	$73,691,278	$81,851,966	$88,450,214

Included in the imports of general merchandise for the week are:

Anvils	15	$180
Brass goods	14	1,491
Bismuth	2	1,118
Bronzes	5	354
Chains and anchors	23	1,375
Copper		103,498
Cutlery	125	44,422
Gas fixtures	4	568
Guns	107	14,258
Hardware	62	6,297
Iron, hoop, tons	1,004	36,999
Iron, sheet, tons	192	15,683
R. R. bars	6,342	103,639
Iron, tubes	481	2,976
Iron, other, tons	753	45,323
Lead, pigs	8,777	57,367
Lead, tons	12	1,254
Metal goods	86	9,254
Needles	4	4,015
Old metal		53
Platina	1	2,000
Plated ware	5	469
Percussion caps	17	2,728
Saddlery	12	2,191
Steel	1,613	31,653
Spelter	110,241	5,314
Tin, boxes	19,449	180,6 8
Tin, 700 slabs	22,987	7,179
Wire	49	4,553

EXPORTS, EXCLUSIVE OF SPECIE

	1871.	1872.	1873.
For the week	$3,649,835	$3,845,903	$4,0 8,273
Prev. reported	45,741,608	41,971,329	49,6 8,289
Since Jan. 1	$49,391,443	$45,817,232	$53,766,562

EXPORTS OF SPECIE.

Total for the week	$825,968
Previously reported	11,235,142
Total since January 1, 1873	$12,061,910

The bank statement shows that the banks this week are $264,250 under the 25 per cent. reserve, against $4,875 last week. The following is a comparison of the averages of the past two weeks:

	March 8.	March 15.	Differences.
Loans	$280,351,300	$278,028,600	Dec. $2,322,700
Specie	17,149,600	16,946,700	Dec. 202,900
Circ'lation	27,801,300	27,610,400	Dec. 190,8 0
Deposits	199,508,700	196,095,400	Dec. 3,413,300
Leg. Ten	39,473,000	38,715,500	Dec. 757,5 0

Government bonds at the close were firm. We quote:

	Bid.	Asked.
U. S. Currency 6s	113½	115⅞
U. S. 6s, 1881, reg	116½	116⅝
U. S. 6s, 1881, c	118⅞	119
U. S. 6s, 5-20 reg. May and Nov	115⅞	116⅛
U. S. 6s, 1862, c	115⅞	116⅛
U. S. 5-20 1864, c	115⅝	116⅛
U. S. 5-20 1865, c	116⅛	116⅜
U. S. 5-20 1867, r. Jan. and July	114⅞	115⅛
U. S. 5-20 1865, c. Jan. and July	114⅞	115⅛
U. S. 5-20 c. 1867 " "	116⅞	117
U. S. 5-20 c. 1868	116⅝	116⅞
U. S. 10-40 reg.	110¾	111
U. S. 10-40 c	110¾	111
U. S. 5s 1881 reg	113	113⅛
U. S. 5s 1881 cou	113	113⅛
Cen. Pac. Gold Bonds	103¼	103¾

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	101⅜	100¾
Lake Shore	94	93⅝
Rock Island	115⅜	114⅛
Wabash	73¾	73⅛
Harlem	139	138½
Western Union Telegraph	86¾	86⅛
Northwestern Preferred	87⅞	87½
Milwaukee & St. Paul	57¾	56⅞
Milwaukee & St. Paul Preferred	76⅛	76¾
Panama	120¾	116½
Pacific Mail	57⅝	56⅝
Erie	64⅞	63⅞
Ohio & Mississippi	45⅝	45⅜
Boston, Hartford & Erie	7⅛	5⅞
Union Pacific	34¾	34⅛
C. C. & I. C.	40⅜	39½
Consolidation Coal	56¾	56⅛
New Cen. Coal	45⅝	45½

GENERAL HARDWARE.

The Saw manufacturers of the United States met in convention at half-past twelve o'clock to-day (Wednesday), at the Monongahela House, Pittsburgh. About twenty-five establishments are represented, and the utmost good feeling prevails. Hon. E. M. Madden, of Middletown, N. Y., was chosen chairman of the meeting, and D. S. Crosby, of St. Louis, Mo., and J. E. M. Sanford, of Bangor, Me., secretaries. The proposition to discontinue the warranty of Saws was the occasion of some discussion. It was decided that the warranty ought to be modified, and a committee was appointed to consider the proper form. It was resolved to abolish the system of consignments. Committees were appointed on permanent organization and by-laws, and uniform lists and discounts. At half-past five o'clock this afternoon the convention adjourned to meet to-morrow morning, when reports of committees will be read and acted on. From present indications there is little doubt that Circular, Mill, and Cross Cut Saws will be advanced, Small and Handled Saws remaining without serious change.

While some houses are busy, complaint is general that buyers are not ordering heavy lines. The state of affairs in the West is not satisfactory, money being very scarce and trade backward on account, to a great extent, of the severe winter. From the South accounts are more favorable.

The buyers who have made their appearance here have bought, with care and caution, such goods as they felt in immediate need of; and there is no disposition manifested to buy anything for speculation, or in hopes of realizing an advance, as was the case so largely last year. Of course the conditions are so different now from what they were then that this is to be expected, but almost every one with whom we talk draws a comparison between the business doing now and that of a year ago, and feels more or less dissatisfied at the contrast, although all admit that a trade like that of last year could not be expected. Of goods in which there has been a break in prices, however (such as Locks, Rules and Strap and T Hinges), large quantities have been sold in the expectation that the old combinations would be "fixed up" as usual and prices advanced again. In the case of Strap and T Hinges this has to some extent been realized, although the new price is lower than was expected. In the case of the Lock and Rule combinations, we have very good authority for saying that they cannot be formed again without leaving out several important makers, without whose co-operation it would be impossible to keep up the prices agreed on. It is our opinion that any calculations based on the reconstruction of these combinations will be disappointed.

The correspondence carried on in this column for the past two weeks has proved interesting to the trade, and a good deal of curiosity is manifested as to the authors. Of course we cannot divulge their origin, either here or in personal conversation; but can say two things in regard to it: 1st, that the letters we have heretofore printed, and those given below, have all come from influential and well-known persons, whose names would be recognized at once if we could give them; and, 2d, that *not one* of all the guesses we have heard as to the authorship of any has been correct. In answer to the letter of "Manufacturer," printed in our last, we have received the following:

To the Editor of The Iron Age:—We notice the reply of "Manufacturer," in your last issue, to our letter of the 6th inst. He says "the sooner the jobber will discontinue this business of distribution the better it will be for the manufacturer and for the consumer."

It seems to us if manufacturers of "standard articles," as well as all articles, protect the jobbers against their own sales to the extent of 10 per cent., it will eventually benefit the producer, and the amount conceded will not "be ultimately at the expense of the consumer." We take the ground that the business of distribution, whether done by the manufacturer himself, or through the middlemen, costs, on the average, 10 per cent., and that the jobbers are entitled *to the whole business* if the manufacturer seeks (as they all do) their aid for distribution. Some of the articles named, and many other standard goods, carry so large a profit, that the producer should blush at his want of consideration for the consumer.

The manufacturer now sells all he can to responsible jobbers and to large consumers, then, having given publicity to his prices, he leaves the jobber to work off his stock in driblets as best he can, at heavy expense of selling in out of the way places.

Among the articles named by us as carrying no profit to the jobber, are Horse Shoes and Wood Screws. Call the market price of the former, 6 cents per lb., and make an allowance of 10 per cent., and the maker realizes, say, $120 for a gross ton, which does not, and has not for the year just past, cost over $90; therefore, the margin is 33⅓ per cent. The net profits of one maker for the year just past are reported to be $800,000. The next article, Wood Screws (which form a large portion of all hardware sales), pays nothing to the middleman, while the producers realize say 200 per cent. profit, one company having earned in 1872 $1,350,000 on a nominal capital of $1,200,000. Is there no margin here to pay the jobber a living price for his services?

It may be, in fact, is, a convenience for "the small trader to find collected in a jobber's store the number of small articles of limited sale," but if you limit the jobber to articles of limited sale his occupation will soon be gone. The fact is, the business of the old style of hardware jobbers in the Atlantic cities is becoming less every year.

We admit the jobber, in his efforts to retain his business in competition with the manufacturer, and in ignorance of the percentage of cost of doing business, often "divides his discount" with his customer, under the impression that he can afford it. He so seldom now gets a full 10 per cent. allowance that when he does get it he considers it a "bargain," and makes a "leader" of it. We see no objection to the jobbers "collecting all the small trade into their own hands." It is their legitimate business, which apparently, by your language, you seek to take away from them under the mistaken idea that you can do even this small trade more cheaply yourself than by allowing directly 10 per cent. for having it done.

As to "the jobbers controlling the prices after a nominal advance has been made," the letter of "Lock Jobber" tells how it is brought about; only he don't go quite far enough, and say that your treatment of the jobber *makes him* interested to break your nicely laid plans, and keep you always in sharp competition for their trade. Their only hope of a liberal margin of profit is to break your combinations at the right time, and "stock up" under the decline in anticipation of a following advance. If the jobbers were treated with liberality, they would be interested in sustaining your reasonable fixed prices; but you sell them goods—then become their competitors.

You manufacturers like well enough to get the jobbers to help carry your stocks, but you forget that so long as it is impossible to get at the same time four pints in a quart measure, you can't both sell and deliver the same identical keg of Horse Shoes to the same man. Therefore, we would suggest that when you have sold the jobber you keep away from his customers.

We well remember your early beginning as manufacturers, and it becomes us, under our present treatment, to remind you upon what meat you fed, that you have grown so great. Your means were limited, your production comparatively small, our business years had their two seasons of spring and fall. You came to us semi-annually, and often received our orders in advance of your production. In due time the goods were delivered, and you received the means to pay for the material for which you had given your obligation. In course of time you outgrew your patrons and became able to carry your stocks, and forgetting all obligations of gratitude to those who furnished much of the means and introduced your goods, you adopted the policy of not only taking fish in other people's waters, but even on the spawning beds wherever you could find them, and, regardless of the consequences, thus you feed.

Your solicitude for the consumer is wonderfully kind and consistent with your actions, hence arise your meetings and combinations to advance prices, that you may realize extraordinary profits on your productions, then break your prices only for the purpose of giving them cheap goods. If one "can't see it" he don't know anything about HARDWARE.

To the Editor of The Iron Age:—To an old hardware man, who in the jobbing trade has for twenty years battled with fate, only that manufacturers could collect accounts easily and find a safe medium for the distribution of their multifarious wares, it is amusing to hear some little "one-horse" manufacturer, whose sales probably could easily be effected in a trip of a few weeks, made by some impecunious and inexperienced rural relative—I say it is amusing to see such a representative of the manufacturing interests mount the rostrum of *The Iron Age* and prate concerning the inutility of the hardware jobbers. To talk about its being no hardship for a small dealer "to go to the thousand and one manufacturers' agencies to pick up the shreds and patches" that usually fill out an ordinary memorandum for a country hardware store. He says: "It takes the manufacturers three or four months to realize on an advance in the price of goods." And why? Simply because a handful of these Lilliputian makers of hardware offer goods in the market at prices that larger makers have to "meet," and the *cupidity* of the whole tribe causes them to accept orders, ultimately unremunerative of any *profit*, but of incalculable benefit in the way of "securing trade;" and it is this same pernicious doctrine which makes so many jobbers "eke out a scanty livelihood," arguing that it is better to submit to a present *concession* (in price) than to a prospective *loss* (in trade).

This minnow among whales, in his letter, thinks "that the existence of a class of hardware jobbers is a detriment to the manufacturers of standard articles," and "if they—the jobbers—have any idea of discontinuing the distribution of those articles, it is hoped they will decide to do so." "If it were done when 'tis done, then it were well it were done quickly."

Fancy "O. Ames & Son," "H. Burden & Sons," the "American Screw Co.," and concerns of similar calibre, supplying an order from every cross road in the country for, say: "¼ doz. Ames Shovels each," of several kinds and descriptions inadequately explained. *One cag* of Hors Shoes, ass'd, No. 1, 2, 3," coupled with the inquiry, "How mutch orf do you maik if I take 5 cags?" Or an order on "American Screw Co.," covering 72 sizes of screws in quantities from 1 gross to 5. Why, my dear young friend, holding yourself up by the slack of your breeches would be ease, comfort and positive enjoyment in comparison.

I remember once, on one of my trips, visiting at B., Vermont, a certain concern named H. & Son, the latter of which was the buyer, and on soliciting his trade, have him broadside me with the startling assertion that "he thought commercial travelers"—no he didn't flatter me with any such loving appellation, *he* said, "Drummers"—were "no especial *benefit* to the hardware community." And what do you suppose this bucolic Solomon advanced as the basis of his statement? Why that we (we drummers) "visited his immediate neighborhood and sold *his* customers." Shades of Plutus! Said I to my captious friend, "where do you suppose *you* would have any customers if some darn fool of a 'drummer' didn't spend six dollars a day to come out here and post you *how to buy your goods?*" And so it is! as our young friend says "the remedy is in the hands of the manufacturers" (as many have found out to their cost). If *they* would cease to make contracts for deliveries of goods not in store, etc., and, to balance such a state of affairs, if merchants would only refuse to agree to pay any money for them which *they didn't have in the bank*, how lovely everything would be, and how extremely high the barn yard fowl would hang. All remaining then for manufacturers to do, would be to *heap up stock* and *wait for customers*, either horn of which dilemma would impale enough of them.

The reason why jobbers exist, arises from the fact that many country dealers cannot afford to be stocked up for two years with *full cases*, by some traveler for a manufacturer. They prefer paying *ten per cent.* profit to a jobber, than having stock lie on their full shelves at a loss of interest, not only in money, but in the disposition to sell at a fair profit, and the jobbers (or call them "middlemen," if you will, for it is really the best name for them) break packages, buy "dozens," to deliver "sixths," and take their chances on the balance; charging the advance for their trouble, after which they wait an average of ninety days to get *their* pay from *fifty* places; while the manufacturer—on an average of sixty days—makes a sight draft on *one*, for his.

To my dear young friend who "reads with so much interest the remarks of Hardware," I would suggest that it is as difficult to get rid of the middleman from reasons above set forth, as it is for a man to give away his lungs and draw a natural breath thro' his veins; for the hardware jobbers are the lungs of the manufacturers thro' which they draw the fullness of breath that gives them life, and, I might add, *The Iron Age* purifies the atmosphere so that it doesn't *poison* them to draw it in. H. O. P.

Sargent & Co. are sending out, under date of March 10th, a circular giving the following new prices on their own goods:

Page.
123 to 126 Sargent's Patent Sash Fasteners, change the discount to 10 per cent. from the Revised List on page 8 of our Discount Sheet, and change the Revised List of No. 136 to $3·75; No. 146, to $5·50; No 138, $4·25; No. 158, $6.
139 Porcelain Shutter Knobs, Nos. 1 & 10....dis. 30 %
140 " " " Nos. 15, 20 & 30 ....dis. 30 %
140 Porcelain Drawer Knobs, No, 5.....dis. 30 %
159 " Picture " .....dis. 20 %
174 No. 20, Fast Joint Butts, Broad, change list to the same as Revised List of No. 10 Broad, 20 per cent. discount, instead of 16⅔, as printed on page 11 of our Discount Sheet.
235 Bell Rings.....dis. 40 %
235 Cattle Leaders.....dis. 40 %
236 Ox Bow Pins .....dis. 40 %
249 Nos. 60 and 62, Plate Hinges.....dis. 5 %
249 No. 66, Hook Hinges.....dis. 5 %

APPENDIX NO. 2.

42 No. 7, Porcelain Drawer Knobs.....dis. 20 %
63 No. 68, Hook Hinges.....dis. 5 %

Cash discount on all of the above 10 per cent.

The state of the market for Locks remains about as last week, and for the present we refrain from making quotations. A Sheffield letter of the 3d instant states that the grinders in that city would strike on the 17th for an advance, in some cases as great as 100 per cent. Coal had advanced 4/ per ton, and Coke, which used to sell at 16/, was 50/. Iron and Steel were still advancing, and at a meeting of the Edge Tool makers it was decided to advance prices. Butcher's and Spear & Jackson's Edge Tools are now held at $5·50, gold, to £—an advance of 50 cents. This makes the difference in price between these goods and American more marked than it has been. Butcher's and Wostenholm's Razors are now sold by a new list, which makes the common varieties about 15 per cent. higher, and good grades about 5 per cent.

Clark & Co., Buffalo, have issued a new illustrated catalogue. We notice that the list price of Ferguson's Sash Locks is reduced from $14 to $12 per gross. Fernald & Sise are offering Parkman's Spade this season at $12·25 and $13 per dozen, for Bright and Black.

IRON.

American Pig.—The market has rested very quiet the past week, there scarcely appearing to be a demand for any description of American Iron. Prices, however, are generally firm. Stocks are thought by some well informed dealers to be ample for present requirements, though there are others who think No. 1 brands scarce and predict higher prices in the future. We quote No. 1 $50, No. 2, $46 @ $48, and Gray Forge, $40 @ $43. We only hear of sales of small lots, No. 2 Poughkeepsie, delivered here at $47·50.

Scotch Pig.—The stock of Scotch Pig Iron here continues small and very little on the way or loading on the other side, and importers continue to ask full prices. The general demand is very light, and though dealers look forward to an active inquiry upon the reopening of inland navigation, we are well advised that the large shipments from Montreal at the end of last season overstocked the Western market, especially Detroit, Milwaukee and Chicago; and, further, there are considerable lots of Scotch Pig Iron, bought during the winter months, now lying here awaiting shipment to Troy, so that expectations from that quarter may not be realized. The transactions during the week embrace 250 tons Glengarnock at $56 @ $57; a lot of Monckland at $50; 50 tons Gartsherrie at $60; a lot of 200 tons Eglinton at $54; and 100 tons Glengarnock at $55, sold from dock. We quote at the close: Coltness at $65; Gartsherrie at $60; Glengarnock at $56 @ $57, and Eglinton at $55.

Following are the prices of Scotch Pig Iron in Glasgow, as reported by Messrs. J. E. SWAN & BRO., under date of February 28, 1873:

GLASGOW BRANDS.

	No. 1	No. 3	No. 4
Gartsherrie	167/6	145/	....
Coltness	170/	146/	....
Summerlee	160/	145/	145/
Langloan	170/	145/	....
Govan	146/	145/	142/6
Calder	*165/	145/	....
Shotts, Bessemer	170/	165/	....
do Ordinary	160/	145/	....
Carnbroe	155/	145/	145/
Wishaw	146/	145/	135/
Monkland	147/6	145/	....
Chapelhall	155/	145/	....
Clyde	147/6	145/	....
Quarter—Clyde	147/6	145/	140/

Glasgow Warrants 3-5, No. 1; 2-5, No. 3, g. m. b. 144/.
*f. o. b Glasgow, 1/ per ton, extra.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

Glengarnock, Ardeer, Eglinton, Lugar	155/	145/	....
Mulrkirk, Portland	Branded Eglinton. 146/	143/6	145/
Dalmellington	145/	142/6	132/6

CURRENT RATES OF FREIGHT ON PIG IRON.

To	From Glasgow.	From Ardrossan
New York	12/	15/
Boston	20/	20/
New Orleans	20/	20/
Baltimore	17/	17/6
Philadelphia	20/	20/
Providence	20/	15/

Bar.—Refined from store continues to be held very strong at the late advance, holders being strengthened by advices of a firm and advancing English market.

Old Rails.—There is only a limited inquiry for Old Rails, the views of holders generally being above those of buyers. We quote at $58 @ $60 for Old Double Head, and $57 @ $59 for T, and only hear of sales of 100 tons T, at a private price.

Rails.—New English are dull and wholly nominal at $70 @ $72, gold, which is much below the cost of importation. New American Rails are held at $82·50 @ $85, from the mills, the outside price for future delivery. Sales include 5000 tons at $85, free on board.

Scrap.—There is only a moderate demand for Wrought Scrap Iron, but holders continue firm at $57·50 @ $60, from yard, for No. 1. Sales include 200 tons on private terms; small lots at $60, 75 tons Old Boiler at $52, 60 tons Machinery at $46, and 45 tons Old Cannon, on private terms.

METALS.

Copper.—There has been considerable business in contracts the past week for stock to be delivered during the summer months, embracing about 700,000 pounds, but the prices obtained are not made public. For immediate delivery the market continues quiet, manufacturers limiting their purchases to small lots absolutely necessary for use from now until they begin to receive deliveries on their late contracts, which were made on a decidedly lower basis than the figures now ruling. The transactions for the week will foot up about 250,000 pounds Lake, in lots, at 34c. @ 35c., latest sales being at 34c. @ 34½c., the outside price for delivery April 1. English Copper was neglected during the earlier portion of the week, but toward the close, with cable advices of higher figures at London, and that market excited, there was more inquiry, and sales effected of 150 tons Best Selected at 29½c. @ 30c., closing firm at 30c., cash. Manufactured Copper and Yellow Metal Sheathing continue steady at 43c. for New Sheathing, 45c. for Bolts and Braziers, 27c. for Bronze and Yellow Metal Sheathing, and 32c. for Yellow Metal Bolts, net cash.

Tin.—There has been an active demand for Pig Tin throughout the week, and this, with cable advices of advancing markets abroad, has strengthened prices materially, holders at the close being very firm in their views, at 33c. @ 33½c. for Straits, 33c. for English, and 38c. @ 38½c. for Banca, all gold. At the coming Dutch sale the offerings will be 75,000 pigs, against 49,300 pigs at the September sale, and 55,380 pigs last April sale. The latest cable advices from Singapore quote that market at $37·50 per picul. The sales of the week embrace about 6000 slabs Straits at 32½c. @ 33c., with small parcels at 33½c., and 25 tons English at 32c. @ 33c., all gold. The steamer St. Petersburg, reported lost off the Bermuda Islands, had 2000 pigs in her cargo. Plates were quiet following our last review, though toward the close there was an improved demand and a good trade effected. Stocks generally are light, and prices very strong, with a slight advance in Coke Tin. We quote: I. C. Charcoal, $12 @ $12·25; I. C. Coke, $10·50 @ $10·75; Charcoal Terne, $10·75 @ $11, and Coke Terne, $8·75 @ $9·75.

Lead.—Consumers entered the market early in the week, and purchased freely of both foreign and domestic Pig Lead, and later, although foreign has ruled quiet, the demand for domestic has been good. Sales embrace about 1000 tons foreign, mostly Spanish, at 6⅝c. @ 6¾c., gold, and 3500 tons domestic, at 6½c. @ 6⅝c., gold. This depletion in the stock has had the effect of advancing prices, and the close is firm at 6⅝c. @ 6¾c. for Spanish and German, ordinary brands; 6⅝c. @ 7c. for English, and 6¾c. @ 6½c. for domestic, all gold. Manufactured Lead is firmly held at former prices. We quote: Bar, 9¼c.; Sheet and Pipe, 10½c., and Tin-Lined Pipe, 16½c., less 10 per cent. to the trade.

Spelter and Zinc.—Foreign Spelter continues very firm, and prices show a further rise, in sympathy with cable advices of an advance in Europe to £30. There has been an active demand, and sales reach 325 tons Silesian, commencing at 7½c., and selling up to 8c., gold, now mostly held at the outside figure. Sheet Zinc continues quiet, but prices steady, at 10½c. @ 11c.

Antimony.—The market for Regulus rules dull, but prices steady, at 14c. @ 14¼c., gold.

PHILADELPHIA.

Messrs. LLOYD, SUPPLEE & WALTON, under date of March 18, 1873, write us as follows: Trade continues without any material change since our last letter. The number of buyers coming into the city daily is steadily increasing, and we should be able to look for an increased trade each week, for the next 60 days. Prices remain without any noticeable changes during the week. The Lock excitement having somewhat subsided, parties are beginning to ask for reasons why their stocks on hand of these goods should be reduced in value if no cause exists. For this we give no satisfactory reasons, we only know for the present Locks can be bought at 40 per cent. discount, which is 20 per cent. less than many jobbers have paid this spring to place these goods upon their shelves. The scarcity of Butcher's Tools in this country, together with the difficulty in supplying ourselves when stocks become exhausted, have induced jobbers to hold these goods firm. We now hold Butcher's Light Tools, at $5·75 to the £, gold. There is no overstock of Butcher's Files upon the market, and we look for them to become scarce again before spring trade is over. Stubb's Files are even more scarce than any of Butcher's goods; we find it impossible to find enough to fill orders. The stocks of American goods now in hands of jobbers are in excellent condition, and most houses appear able to fill orders for these goods with a reasonable degree of promptness.

PITTSBURGH.

MARCH 15.—The weather has been mild and spring-like during the past few days, and, as might be expected, general business has improved, though it cannot be termed active, nor yet is it up to what it usually is at this particular time. Stringency in money matters is the great source of complaint, and there is no question that this is the greatest drawback to which we are subjected at the present time. It is extremely difficult to make collections, and business is very much restricted in consequence. Many of our manufacturers are very clamorous for the issue of the 44,000,000, claiming that there is not money enough in circulation to do the business, and that the sooner this is done the better. Some of our most substantial men and firms, at least so considered, are very much cramped; being unable to make collections they are very much pressed to meet maturing obligations, and unless there is an easing up, of which there is not much indication, it is feared that more of them will be forced to the wall. This has been an unusually hard winter on our manufacturers generally. The long and severe cold weather restricted the demand very materially for their products, and then the tightness in money matters, as already stated, rendered it very difficult to make collections. However, it may be safely considered that the first named drawback has been removed, but in regard to the last one, it remains unmoved; and while there is no doubt that the government officials are pursuing a policy which they consider best for the welfare of the country at large, yet there is no getting over the fact that very strong and almost unanswerable arguments can be produced in favor of expanding of the currency. So far as I can learn, the great majority of our Pittsburgh manufacturers are strongly committed in its favor. The market for finished Irons of all kinds continues to improve steadily, and notwithstanding the season was late in opening up, the indications are favorable for a good spring and summer trade; at present, however, it is considerably short of what it was at this time last year, but it may be attributed to causes already mentioned, an unusually hard winter, and an exceedingly close money market. There has been no change in prices, but an early advance is almost certain in sympathy with the raw material; four and six-tenths is the card,

but four cents is the selling price, net cash. Nails were advanced 25 cents per keg this week—$5·25 is the card, or $5, net cash; there is a continued good demand, orders are coming in freely, and the mills seem to have all they can do, and the prospects for the future are considered favorable. The Pig Iron market is quiet and unchanged, although the general feeling seems to point toward increased firmness; and for good Irons, higher prices soon seem probable. As has been the case for some time past, the demand is mainly for small lots to supply immediate want, and the inquiry is chiefly for good Open Gray Red Short, which is wanted for mixture, and is scarce. The market is very firm. Sales of several hundred tons within past two weeks, at $43 to $43·50, four mos., but it is now generally held by producers at $45, and they are refusing to sell for any less. Sales of Close Gray Neutral, at $37, cash; Close Gray Forge, at $40; Close Gray Red Short, at $38, cash; Charcoal Irons in fair demand, with sales of No. 2 Foundry, at $56 to $57; Gray Forge, at $55; Cold Blast, at $68; No. 1 Foundry, at $55 to $56. For Anthracite there does not seem to be so much inquiry, at least the sales are smaller, but prices are firm and well maintained. Sales of No. 1, and extra No. 1 Foundry, at $46 to $48; No. 2, at $42 to $44; No. 3, Neutral, at $41·50, four mos, and Gray Forge, at $40. There is a continued steady demand for Steel, and while there is no change to note in prices, an early advance seems almost inevitable in sympathy with Swedes Iron. The demand at present is mainly for the finer grades used in the manufacture of tools. Trade in Window Glass is steadily improving, and the market is considerably firmer under the influence of the advance in the East, and the indications are that prices will be put up here before long, or the discount reduced, which is the same thing. Fifty and ten has and is still regarded as the ruling discount on large lots, but it is understood that there has been cutting under—some sales have been made at sixty, straight.

The *Commercial* of 15th inst. says: Since our last report there has been considerable inquiry for strictly Red Short Iron, and several lots have been sold at the same prices as reported last week. There is scarcely any demand for Neutral or Cold Short Iron. Consumers appear to be well supplied with that description of Iron. Without any change to note in prices, we are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

500 tons close gray	$40 00	4 mos.
400 tons white mottled and close gray red short	40 00	4 mos.
200 tons close gray red short	38 00	cash.
100 tons gray forge red short	43 50	4 mos.
100 tons gray forge red short	40 00	4 mos.
100 tons gray forge	40 00	4 mos.
100 tons gray forge red short	43 00	4 mos.
100 tons clear gray neutral	37 00	cash.
50 tons clear gray forge	40 00	6 mos.

ANTHRACITE.

150 tons gray forge	$40 00	4 mos.
100 tons No. 1 foundry	45 00	4 mos.
50 tons No. 1 foundry	46 00	4 mos.
50 tons No. 2 foundry	42 00	4 mos.
50 tons No. 2 foundry	44 00	4 mos.
30 tons No. 2 foundry	44 50	4 mos.
30 tons No. 1 foundry	45 50	4 mos.
20 tons No. 2 foundry	44 00	4 mos.
20 tons No. 1 foundry	48 00	4 mos.
100 tons No. 3 neutral	41 50	4 mos.
50 tons No. 2 neutral	53 00	4 mos.
20 tons No. 2 neutral	52 50	4 mos.

HANGING ROCK CHARCOAL.

125 tons No. 1 foundry	$55 00 @ 58 00	4 mos.
55 tons No. 2 foundry	56 00 @ 57 00	4 mos.
25 tons No. 1 charcoal	57 00	4 mos.
25 tons No. 1 Olive	56 00	cash.
15 tons cold blast	68 00	4 mos.
10 tons gray forge	55 00	4 mos.

CONNELLSVILLE COKE.

150 tons Dunbar forge, No. 1	$40 00	4 mos

CINCINNATI.

Messrs. ADDY, HULL & Co., under date of March 17, write us as follows: *Pig Iron*—Receipts have been moderate during the week, and with a fair demand stocks are being gradually reduced. Best grades of Foundry are scarce, and the current demand is in excess of the supply.

HOT BLAST CHARCOAL.

Hanging Rock No. 1 ₱ ton	$55·00 @ 56·00	4 mos.
" " No. 2	53·00 @ 54·00	4 mos.
" " Forge	45·00 @ 46·00	4 mos.
Tennessee No. 1	54·00 @ 55·00	4 mos.
" Forge	44·00 @ 45·00	4 mos.
Alabama No. 1	55·00 @ 57·00	4 mos.
Missouri No. 1	55·00 @ 57·00	4 mos.
" No. 2	53·00 @ 54·00	4 mos.

HOT BLAST STONE COAL.

Missouri No. 1 ₱ ton	$55·00 @ 56·00	4 mos.
" Forge	43·00 @ 44·00	4 mos.
Ohio No. 1	53·00 @ 55·00	4 mos.
" Forge	40·00 @ 43·00	4 mos.
Scotch Pig, No. 1	56 00 @ 57·00	4 mos.

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel ₱ tn.	$60·00 @ 65·00	4 mos.
Missouri " "	60·00 @ 62·00	4 mos.
Kentucky " "	58·00 @ 60·00	4 mos.
Tennessee " "	58·00 @ 60·00	4 mos.
Georgia " "	60·00 @ 63·00	4 mos.
Alabama " "	60·00 @ 63·00	4 mos.
Machinery and Forge	58·00 @ 60·00	4 mos.
Blooms	112·00 @ 116·00	4 mos.

BOSTON.

MARCH 15.—There has been a fair demand for Refined Bar Iron at about last week's rates, the bottom price being $105. Small lots can be bought at a lower figure than lots of 100 tons or more, as a large buyer would be likely to pick sizes which would break the assortments of many of the leading dealers, and as they could barely replace them at $105, they are not anxious to make large contracts at that price. Pig Iron is very firm, for both American and Scotch. Coltness is scarce, and what few sales are made are at about $70. The sales of Pig are not large. Some who have heretofore used Scotch are now buying American. We quote yard lots of American Pig Iron at $55 @ $58 per ton, including No. 2 extra at $53 @ $54, and No. 1 at $56 @ 58. Scotch is held firmly. We quote Eglinton at $60, Coltness at $64 @ $70, Gartsherrie at $61 @ $62. Charcoal at $57 @ $60.—*Com. Bulletin.*

CHICAGO.

MARCH 13.—*Hardware*—The general trade is moderately active. *Iron, Steel and Nails*—The trade continues to meet with a fair demand, and prices are well sustained. Nails are more active and firm; the stocks are not large, and an advance in prices is anticipated; manufacturers' prices are tending upward. *Pig Iron*—Scotch has advanced again, and the range is from $63 to $67 per ton. *Tinners' Stock*—There has been a good inquiry for Metals, especially for Tin Plate, during the past week, and a fair business has been transacted. Prices are very firm, with an advancing tendency.—*Jour. of Com.*

SAN FRANCISCO.

MARCH 7.—*Hardware*—Extensive preparations are being made by representative leading houses for a large trade this year, and from present indications they are not to be disappointed. Prices for staple goods remain as heretofore. We quote Collins' Handled Axes at $17·50 @ $20, according to weight. *Metals*—Holders of Pig Iron are now firm in demanding $57·50 @ $60 per ton, with jobbing sales at the latter rate. There is a fair prospect of still higher rates being reached ere long. We are not aware of any purchases of other leading staples, nor of any material change in rates. Prices as heretofore, excepting Tin Plate, which, for lack of any considerable demand, are in favor of the buyer, *Nails*—Imports from January 1st to March 1st: kegs, 22,479. The stock is large, and the price of invoice lots entirely nominal. The trade prices remain as heretofore: $5·75 for 10d. to 60d.; 8d. and 9d., 25c. per keg above 10d.; 6d. and 7d., 50c. do. do. 10d.; 4d. and 5d., 75c. do. do. 10d.; 3d., $1·50 do. do. 10d.; 2d. and 3d. fine, $2·50 do. do. 10d.; Cut Spikes, all sizes, 25c. above 10d. Thus the jobbers' range is $5·75 @ $8·75.—*Com. Herald.*

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, corner of South Charles and Lombard streets, report us the following prices, under date of March 18: Trade is somewhat more active than for some time past, but the specifications in hand still continue small, and are evidently issued only for immediate wants. Quotation figures for Refined Bars are weak, and being constantly undersold even for small orders, and business, as a rule, unsatisfactory for this season of the year.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick	4½c. to 4¾c. per lb.
1 to 4½ wide by 1⅛ to 2 thick	4½c. to 4¾c. per lb.
Round and square, ordinary sizes, from ¾ to 2 inclusive	4½c. to 4¾c. "
Hoop Iron, 1⅛ wide and upward	5¾c. to 6c. per lb.
Band Iron, from 1⅛ to 4 in. wide	5 to 5½c. "
Horse Shoe Iron ¾ to 1 wide by ⅜ to ½ thick	5½ to 5¾c. "
Norway Nail Rods	7¾c. to 8c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	17c. "
Machinery Steel	12c. "
Cast Spring Steel	11c. "
Homogeneous Steel Plate	13c. "
Perkins' Horse Shoes, per keg of 100 lbs.	$6·25
" Mule Shoes " "	7·25

Common Horse Nails, from 14c. to 18c per pound.

10	9	8	6
Putnam Horse Nails..23	24	25	26 28c. per ₱
R. R. Spikes 5¼ by 9-16 at 5¼c per lb.			

LOUISVILLE.

Mr. GEO. H. HULL, under date of March 17, writes us as follows: The market continues firm without quotable change. The mills have bought largely during last four weeks, and there is less inquiry for Forge Irons. Foundry metal is more in request and is held at full figures. The stock of Cold Blast Iron is light, and prices are firm. The usual time, four months, is allowed on quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores	$55·00 @ 56·00
" 2 " " "	53·00 @ 54·00
" 1 Forge, " "	45·00 @ 47·00
" 1 F'dry, from Tennessee Ores	54·00 @ 55·00
" 2 " "	52·00 @ 53·00
" 1 Forge, " "	45·00 @ 47·00
" 1 F'dry, from Alabama Ores	56·00 @ 57·00
1 " " Iron Mountain Ores	55·00 @ 60·00

HOT BLAST STONE COAL.

No. 1 F'dry, from Missouri Ores	54·00 @ 55·00
2 " " "	52·00 @ 53·00
" 1 Forge, " "	44·00 @ 45·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores	60·00 @ 65·00
" " Tennessee Ores	56·00 @ 58·00
" " Alabama Ores	60·00 @ 62·00
" " Georgia Ores	60·00 @ 62·00
" " Missouri Ores	58·00 @ 60·00
" " Kentucky	58·00 @ 60·00

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending March 18, 1873:

Hardware.

Bruce G. W.
Casks, 4
Barstow E. W. & Son,
Chains, 1; cks., 17
Boker Hermann & Co.
Anvils, 100
Cases, 9
Bartlett, Berry, Reid & Co.
Cases, 5
Campbell H. P.
Casks, 2
Degraw, Aymar & Co.
Chains, cks., 1
Dickinson Henry
Casks, 2
Drexel, Morgan & Co.
Casks, 1
Fisher & Rittershaus,
Cases, 12
Fuller Bros.
Chains, cks., 50
Files, cks., 5
Edge tools, cks., 5
Cutlery, cks., 2
Packages, 2
Field A. & Co.
Chains, cks., 30
Casks, 14
Mdse. pkgs., 37
Packages, 12
Hilger E. & Sons,
Cases, 6
Harmar Wm. & Co.
Mdse. pkgs., 8
Hildick A. H.
Chains, 13; cks., 8
Hogsheads, 1
Casks, 1
Jarvis Geo. E.
Bolts and nuts, cases, 100
King H. & J. W.
Chains, casks, 47
Lau & Garlichs,
Mdse. pkgs., 4
Mason John W. & Co.
Wire rope, coils, 5
Moss F. W.
Files, cks., 9
Patterson Bros.
Packages, 3
Robbins C. & Sons,
Cases, 7
Russell & Erwin Mfg. Co.
Casks, 2
Roosevelt S. & Co.
Cases, 5
Turnor R. A.
Mdse. pkgs., 14
Van Nest A. R. & Co.
Cases, 1
Von Cleff Bros.
Mdse. pkgs., 9
Van Wart & McCoy
Mdse. pkgs., 2
Western Union Tel. Co.
Gal. wire, lots, 170
Witte John G. & Bro.
Mdse. pkgs., 18
Arms, cases, 7
Cases, 20
Wiebusch F.
Mdse. pkgs., 12
Chains, cks., 45
Anvils, 150
Casks, 7
Order.
Cases, 25

Iron.

Bruce & Cook,
Bundles, 520
Bussing, Crocker & Co.
Pig, tons, 200
Brown Bros. & Co.
Rods, bdls., 200
Champion H.
Rails, 384
Egleston Bros.
Bars, 1614; bdls., 609
Gould Alfred,
Scrap, tons, 44
Griswold J. A. & Co.
Pig, tons, 420
Holdane, Hopkins & Stokes,
Bars, 2400
Bundles, 160
Henderson Bros.
Pig, tons, 100
Hopkins H. & J.
Hoop, bdls., 1000
Lang W. Bailey & Co.
Rails, 758
R. R. bars, 440
Laughland & Co.
Haybands, bdls., 377
Lawton & Lenox,
Wire bale ties, lots, 239
Gal. strand, cks., 8
Milliken S. Jr.,
Rods, bdls., 604
Naylor & Co.
Bars, 6012
Fish plates, bdls., 77
Oelrichs & Co.
Casks, 512
Piersons & Co.
Rods, bdls., 150
Roche Bros. & Co.
Scrap, lbs., 48,449
Robbins C. & Sons,
Boxes, 110
Smith G. G. & Co.
Bars, 2679; bdls., 244
Scroll, bdls., 203
Whitney C. W.
Flues, 132
Whitney A. R.
Scroll, bdls., 151
Bars, bdls., 350
Order
Bars, 7798
Scroll, bdls., 21
Sheet, bdls., 296
R. R. bars, 3062
Pig, tons, 297
Scrap, tons, 13

Steel.

Abbott & Howard,
Cases, 24
Bundles, 38
Frith Ewd.
Cases, 4
Bundles, 74
Bars, 9
Hogan John,
Mdse. pkgs., 8
Cases, 45
Lang W. Bailey & Co.
Blooms, 55
Moss F. W.
Casks, 1
Naylor & Co.
Axles, 50
Springs, 14
Prosser T. & Sons,
Mdse. pkgs., 183
Peace Chas.
Bundles, 1126
Piersons & Co.
Bundles, 331
Slagg Joseph,
Mdse. pkgs., 21
Sanderson Geo. & Co.
Bundles, 59
Cases, 11
Trippett J. & Bro.
Bundles, 260
Vose, Dinsmore & Co.
Bundles, 71
Van Wart & McCoy.
Mdse. pkgs., 1220
Order.
Bessemer rails, 353
Bundles, 631

Metals.

Drexel, Morgan & Co.
Rails, 346
Goodwin & Rice,
Terne plates, bxs. 550
Gould Alfred,
Yellow metal, bdls., 740
Hardt Lucius,
Tin, ingots, 300
Lamarche H.
Zinc, cks., 175
Magnus E.
Scrap, copper, cks., 1
Moran F.
Scrap, pkgs., 7
Marques S.
Scrap, cases, 22
Naylor & Co.
Tin plates, bxs., 880
Phelps, Dodge & Co.
Tin plates, bxs., 8102
Lead, pigs, 3540
Tin, ingots, 1648
Copper, cks., 270
Roche Bros. & Co.
Yellow metal, lbs., 1396
Copper, lbs., 19,314
Brass, lbs., 50
Order.
Lead, pigs, 2544
Spelter, plates, 4125
Lead, bars, 1
Tin plates, bxs., 6469
Copper, cks, 85; bbls, 100; plates, 9

FOREIGN.

GREAT BRITAIN.

Messrs. J. Berger Spence & Co., London, Glasgow and Manchester, under date of March 3, 1873, report:

Metals—An improvement in the demand for Metals generally has been responded to by a further advance in prices, more particularly for Iron, and the inexorable logic of events is having its due effect on consumers, who are gradually becoming familiarized to the present high rates. Scotch Pig Iron Warrants have made another "bound," and the market has been active throughout the week. The prices of Middlesborough Pig Iron are also advanced, and the limited quantity available for prompt delivery is rapidly being cleared away. The coal difficulty is restricting the make of Manufactured Iron, and quotations are now usually based on specifications in hand, makers in general declining to contract for forward delivery. The demand for Copper is steady, and the advice of the moderate quantity chartered for in Chili during the last fourteen days of January being only 700 tons ores and Regulus, and 700 tons bars for the United Kingdom, has tended to harden prices. There is not much doing in English. A slight improvement is perceptible in Tin, and Straits are dearer. English smelters, also, are firmer. There is no alteration in the value for Lead, and although the weather lately has been adverse to its use, the consumption still keeps fairly up to the average. Spelter is very firm, and the difficulty in obtaining ores makes it appear probable that higher rates may shortly be obtainable.

IRON.—"Ayresome" Yorkshire Pig Iron, nominal, No. 1, 129 6; No. 2, 124 6; No. 3, 122; No. 4 (Foundry), 121; No. 4 (Forge), 121 net cash, or 2 extra 4 months' bills. Scotch Pig Warrants, 143 6 to 145. Staffordshire Bars, £14 to £14. 10. Hoop Iron, £14. 10 to £15. Gas Tubes, 30 per cent. off new list. Boiler Tubes, 5 per cent. premium.

COPPER.—Nominal. English Tough Ingot, £93 to £94. Chili Bars, £85. 10 to £86.

TIN.—English Ingot, £146 to £147. Straits, £142 to £143.

TIN PLATES.—Best Coke, I. C., 38/ to 40/; Charcoal, I. C., 43/ to 45/ per box.

LEAD.—Best English Soft Pig, £23. Refined Red Lead, £25 to £27.

ANTIMONY.—French Star, £62 to £64.

SPELTER.—Silesian, special brands, £26 to £26. 10. English, best brands, £26. 10.

The Paris Metal Market.

(*Translated for The Iron Age from Le Commerce.*)

PARIS, Feb. 19, 1873.—*Metals.—Spelter* is firm, and there is more doing in it. *Lead*, unaltered. *Copper* has declined very materially. Quotations are the following: Chili Copper, in bars, 230 francs; in Ingots, 240; English Tough, 237½; Clean Corocoro Ore, 230; Banca Tin, 385; Straits, 375; English, 372½; French Lead, 57; English, 57½; Belgian and German, 57; Silesian, Spelter, 66; and other good brands, 65 to 65½ francs; all per 100 kilos.

The Marseilles Metal Market.

(*Translated for The Iron Age from Le Commerce.*)

MARSEILLES, Feb. 18, 1873.—*Copper* has been slightly improving. *Lead* is well sustained. *Tin* is unchanged. We quote as follows: Swedish No. 1, Steel, 68 francs, the 100 kilos.; Chili Copper, in bars, 230 francs, the 100 kilos.; Tin, 385 to 395, and Lead, 51 francs.

Farnham & Co.'s Bombay Metal and Coal Report.

BOMBAY, Feb. 1, 1873.—*Metals* are in fair demand, and sales of Braziers Copper have been made at 55 rupees per cwt., while Yellow Metal Braziers have changed hands at 44 to 44½, and 500 cwts. English Spelter has realized 10 rupees per cwt. *Coals.*—Market steady. The "Tim Whiffler's" cargo has been disposed of at 26 rupees per ton alongside. We quote Coke, landed, 45 rupees per ton; Smith Coals, 30 rupees; West Hartley, 26; Wales or Welsh Hartley, 25; Cardiff, 26 to 27, and Australian, 24.

Sandbach, Parker & Co.'s British Guiana Coal Report.

GEORGETOWN, (DEMERARA), Feb. 22, 1873.—Business has been unusually dull and there are symptoms of financial troubles. There is a general feeling of uneasiness, and an unwillingness to do any business other than what is absolutely necessary. *Coals.*—No arrivals; sale ex. store of loose, from Europe, at $12 per ton; hogsheads at $13. No late import of Nova Scotia.

Antwerp Metal Market.

(*Translated for The Iron Age from the Revue Commerciale et Maritime.*)

ANTWERP, Feb. 21, 1873—*Metals.*—There is hardly any business doing for the want of a proper assortment. Import of the week 5818 tons pig iron, and 133 ingots Copper from England.

The Hamburgh Metal Market.

(*Translated for The Iron Age from the "Borsenhalle."*)

HAMBURG, Feb. 21, 1873—*Lead* is unaltered and as high as ever. German, 23 to 24 marks; English, 24; and Spanish of Rein & Co., 24½. *Copper* is dealt in, in a small way for consumption, at unchanged rates. Northern sorts, 97 to 105. *Tin* is quiet; Banca, 1·65 marks per pound; English, 1·55; Rod, 1·60. *Spelter* has gone on improving, and the dealings have been large, says 8000 cwts., at, between, 24·37½ and 24·90 marks.

HAMBURGH, Feb. 28.—*Lead* continues high, with little doing on the spot. German, 23 to 24 marks; English, 24; Spanish of Rein & Co., 24½. *Copper*—Stagnant; Northern sorts, 97 to 105. *Tin* is quiet, and the dealings are of a retail nature. Banca, 1·65; English, 1·55; Rod, 1·60 per pound. *Spelter* is unchecked in its upward movement, and transactions are lively and extensive, say, 10,500 cwts. during the week, for the most part futures. The market closes firm at 26 marks.

Silesian Spelter Quotation.

(*From the Frankfurter Zeitung.*)

BRESLAU, Silesia, Feb. 21, 1873.—*Spelter*, 7 5-16 to 7 11-12 thalers.

The Dutch Tin Market.

(*Translated for The Iron Age from The Nederlandische Courant.*)

AMSTERDAM, Feb. 25, 1873.—*Tin.*—The market is quiet, and but a few sales have been made on the spot at 85 to 84½ guilders for Banca, and 82½ for Billiton.

Vienna Exposition Notes.

We translate the following from the Hamburgh *Borsenhalle:*

The imperial crown, which will surmount the uppermost lantern of the rotunda, is attracting special attention. It is iron, and 17 feet in hight. It is being gilt now in one of the pavillions of the western passage, and will be taken apart before it is placed in position.

The preparatory labors of decoration are now proceeding in the rotunda night and day. At night the immense space is lit up with gas and two reflectors of gigantic proportions. It is intended to increase the intensity of light by a ladder-like scaffolding, which will support innumerable jets of gas. The seams of the metal roof are now being filled with lead, and it is to be hoped that it will prove tight. The jute hangings are now being painted, which will serve as a ceiling. These jute hangings are in the shape of colossal discs, and one of them is sufficiently large to cover the entire floor of one of the side galleries, where they are being painted.

Now that the iron part of the rotunda is finished, it may not prove devoid of interest to give some dimensions of it. Ere doing so, it ought to be mentioned that the total weight of iron used in building it has been 92,000 cwts. The diameter of the rotunda is 330 feet in one direction and 320 in the opposite one; the extreme hight of the structure will be 270 feet.

The great attraction will be the view which visitors will enjoy from the three galleries, one of which will run inside the rotunda, 75 feet above the ground; the second one 150 feet above the ground, outside the second lantern, and the third 210 feet above the ground, outside the top lantern. The diameter of the top lantern, through which the light of day will penetrate into the rotunda, will be 85 feet.

The *Allgemaine Zeitung* says: The following will be the awards of the international jury: I. The Diploma of the International Exhibition at Vienna of 1873, which will be awarded for special distinction and eminent merit in science, or its application in popular instruction, and in forwarding the intellectual, the moral and material welfare of mankind at large. II. The Medal of Progress, to be awarded to exhibitors for special progress over exhibitors at former expositions, be the same in the shape of new inventions, the introduction of new materials, or in their method of application. III. The Medal of Merit, to exhibitors who show proof of superior quality and perfection of workmanship, extent of manufacture, the opening of new markets for manufactures, the introduction of improved tools and machinery, and, finally, the superiority of quality. IV. The Art Medal, for superiority in the fine arts. V. The Medal of Good Taste, to be awarded for superior color and shape. VI. The Co-operative Medal, to be awarded to foremen, model designers, model makers, and any assistants that may have materially contributed toward either superiority of production or increased sale of an exhibited article. VII. The Diploma Acknowledgment, a minor award, to cover cases of less merit than the preceding ones.

Our English Letter.

Review of the British Iron, Coal, and Metal Trades.

(*From our Special Correspondent.*)

SHEFFIELD, ENG., Feb. 24, 1873.

In my last communication I had occasion to devote a large portion of my space to remarks upon the great fuel question. This week I candidly volunteer the statement that to chronicle the whole of the facts, arguments, and theories which have transpired anent this most important matter at anything like length, would be to occupy one-half of even your large space. I must, therefore, bend to that stern necessity which knows no evasion, and confine myself to a condensed comment upon the more prominent features of that question which has suddenly become—as some of the newspaper reporters gloatingly term it—"the question of the day." That this should and must inevitably be so is not for one moment to be wondered at, when we reflect to what an enormous extent English business and domestic life is dependent upon coal. No foreign manufacturer has ever been so wasteful of coal and coke as the British iron master, and no domestic circle out of Great Britain ever rejoices in that blazing fire, which is at once the comfort and pride of the average Englishman, not that one-fourth of the heat evolved from these huge house fires performs the function of warming the rooms in which they are placed, mainly owing to the amazingly faulty construction of the bulk of the stove grates, but escapes up the unnecessarily wide chimneys, pursued unceasingly through wide barred grates by errant draughts of cold air. So far as the manufacturing waste is concerned, it is but just to state that during the past two or three years many fuel-saving contrivances have been introduced into use, and have more or less effectually effected the purpose for which they were designed. In London, coals, last week, were sold at from 44s. to 52s. per ton—and in small quantities even as high as 60s.—but have now declined 4s. or 5s. You may readily surmise how heavily this enormous price would fall upon the already overburdened poor of the modern Babylon. A special correspondent of a London daily paper speaks of the precious mineral being retailed, in his own sight, at 4½d. per 14 lbs., and deposes to seeing it sold at a penny per lump—weighing something like two pounds and a half! At this rate it is manifestly impossible for the impoverished families who inhabit the back courts and alleys of our capital to cook separately—hence, we find the correspondent to whom I have just alluded, depicting the grotesque anger of the retailing coal dealer when he complains that "it ain't no charity selling 'em penworths 'cos they all clubs together and cooks their wittles"—over a fire made of the joint purchases! Some few resort to lamps lighted by paraffine, benzoline or other mineral oils, both for warmth and for boiling their coal-deserted kettles. Others purchase old oilcloth, pieces of timber, fragments of wood in order to have something in place of the once familiar black diamonds. In the Irish large towns, prices are simply prohibitive, and at such of the English centers of population as are distant from the colliery districts, much positive suffering on this account alone exists. At Nothingham the other night a largely attended open air meeting, mainly composed of women, was held, at which the assembled members of the fair sex unanimously passed a resolution expressive of alarm at the present high price of coal, and protesting against the inhumanity and extortion of the coal owners. I think we may safely admit that this is, indeed, a question of "woman's rights!" Public opinion is just now very strong against the colliery owners, and to a certain extent justly, but I hardly think they are to be vehemently denounced for obtaining as much as they can for the articles in which they deal. To my own mind it appears pretty clear that the coal *merchants* are most to be blamed. We have no written or published evidence of a "rig" or combination, yet when we find them demanding—with remarkable unanimity—over £1 per ton clear profit we are liable to entertain suspicions. It is a fact within my own and a good many other people's knowledge, that for several weeks past agents from the London coal merchants have been in Derbyshire and Yorkshire, buying all the coal they could get at prices which are positively two and three shillings per ton *more* than the same coals can be delivered in Sheffield for. Further statements to the same end might be advanced, but it is, perhaps, best to await the result of the investigation of the Royal Commission, authorized by Parliament on Friday night, on the motion of Mr. Mundella, the junior member for Sheffield. In the course of the discussion in the House of Commons, on the matter, Mr. Bruce, the Home Secretary, seemed inclined to think that the mischief had originated with the working colliers, who had idly and intentionally limited the out-put. When the truth is arrived at we shall probably find that the blame does not rest with one or other class, but is divided. One thing, at least, is certain, and that is that the colliers' wages have not been put up in anything like equivalent proportion to the increased prices. Mention of various miners' movements will be found hereinafter, but before I quit the topic I feel tempted to present your readers with a few figures demonstrating facts which commend themselves. Here they are, first being a table stating the quantity of coal raised in the various districts of Great Britain during the year 1871, together with the number of collieries and miners in each:

Name of Districts.	Male Coal min'rs 1861.	Male Coal min'rs 1871.	Tons of Coal Raised. 1871.	No. Coll'ir's. 1871.
Northumberl'd, Cumberland, N. Durh'm.	22,719	36,000	12,530,000	190
South Durham	30,805	44,000	17,946,000	161
N. & E. Lancashire	23,525	26,110	7,575,800	286
W. Lancashire and N. Wales	24,362	32,218	8,775,000	186
Yorkshire	31,938	38,600	12,801,260	4.2
Derby, Not'ham, Leicester, Warwicksh'e	23,431	31,051	9,252,900	200
N. Stafford, Chesire, Shropshire	16,427	21,300	6,500,000	228
South Stafford & Worcestershire	25,225	31,000	10,500,000	545
Monmt'h, Gloucester, Somersetshire, Devonshire	21,762	26,881	7,000,000	186
South Wales	26,292	37,960	9,120,000	280
Scattered over other counties	148	....	....	....
East Scotland	18,091	27,300	8,883,926	220
West Scotland	17 795	19,561	6,554,365	196
Totals	282,473	370,881	117,439,251	3,100

The following shows comparatively the number of collieries, persons employed, and tons of coal raised in Great Britain:

Year.	No. of Collieries.	No. of Male Persons Employed.	Tons of Coal Raised.
1867	3,195	333,116	105,077,713
1868	3,262	346,820	104,56 6,959
1869	3,206	345,446	108,003,482
1870	3,142	350,894	112,875,725
1871	3,100	370,881	117,43 ,251

Yorkshire, with the sole exception of South Durham, produces more coal than any other district, and has more collieries than any, save only South Staffordshire and Worcestershire. In 1861, Yorkshire employed most male coal miners, but in 1871 South Durham had a majority of over 4000. Dipping again into figures, I find that the county of which Sheffield is the most populous town (having, it is believed, outrun Leeds) now raises more coal than it has ever done. Thus, in 1867, there were in this county 434 pits, employing 37,000 miners, who raised 9,850,000 tons of coal, while in 1871, 423 pits, with 38,600 miners, were able to produce 12,801,260 tons. Clearly there has been no limitation of output up to 1871, but I fancy the 1872 returns will tell a different tale. Again plunging into statistics, I may inform you that the Midland coal field is the largest in England, embracing, as it does, parts of Yorkshire, Derbyshire and Nottinghamshire, but is some 160 square miles smaller than the South Wales field. It was estimated by Mr. Woodhouse, who reported on the matter for the Coal Commission, that the Midland coal field contained (worked and working) about 18,406¾ millions of tons of coal, allowing for waste, roof supports, &c. I now give a full price list of coal in every leading part of Great Britain, beginning—as the proverbial Pat says—at the commencement. London, best Wallsend, 44s.; Newcastle, 42s.; seconds, 40s.; Kitchenbrights, 38s.; Ruabon, 42s.; Hartlepool, 43s.; Barnsley, 40s.; Derbyshire, 40s.; nuts, 32s. to 36s. per ton, and coke about 20s. to 32s. per chaldron. Wales—Rhondda Merthyr smokeless steam coal, f.o.b., at Cardiff, 23s. 6d.; Hirwain, 22s. 6d.; Rhondda Resolven, 22s.; No. 3 Rhondda, for swelling, 21s.; No. 3 Rhondda coke, 42s. 6d.; and house coal, 24s. Birmingham and Wolverhampton—Earl Dudley's best thick coal, 20s. 6d.; seconds common, 16s. 6d.; lumps, 15s. 6d.; black coal, 14s. 6d.; screenings, 11s.; black screenings, 10s. 6d.; engine slack, 8s. 6d. (all for Old Park, Hunley, Wallows and Saltwell pits). At the Coneygre, Foxyards, Rounds Hill, Deepfields and Rocket collieries of Earl Dudley, situate on the east side of the town of the same name, best coal into boats is 21s. 6d.; into carts, 22s. 6d.; common coal into boats, 20s.; furnace coal, 17s.; block coal, 13s.; and lumps, 16s., into carts in each case being 1s. per ton extra; engine slack, 9s. into boats, and fine slack 5s. 6d., both being sixpence additional into carts. Heathen coal into boats is 10s.; heathen lumps, 16s.; and engine slack, 9s. Derbyshire—converting coal, 21s. to 23s.; slack, 12s.; best ordinary, 22s.; common, 15s. to 17s.; coke, 37s. 6d. Sheffield and South Yorkshire—best ordinary at pit mouth, 24s. to 25s.; converting, 24s.; engine slack, 13s.; and common, 18s; coke, 37s. 6d. to 40s. West Yorkshire, similar to South Yorkshire. Manchester and Lancashire, generally best house coal, 28s. to 30s.; furnace coal, 19s. to 20s., and engine coal, 14s. 6d. to 17s. 6d. (Cleveland, Middlesboro',) steam coal, 20s. to 22s.; other sorts, 20s. to 25s.; slack, 13s. to 15s.; coke, 42s. 6d. and 45s.; Durham, 20s. to 23s.; Glasgow, from 22s. to 30s. These quotations will afford an idea as to the abnormal prices now prevalent throughout the country, but I don't know any word long and hard enough—even in German, and that silvery language boasts two or three, I believe, of some 16 syllables—that would aptly describe the great and growing discontent that exists. *I* certainly shall not attempt to portray it, nor shall I, on this occasion, dwell upon the hindrances thereby inflicted upon business operations. I enclose you a couple of cuttings bearing upon the point, for which you will possibly find space in another part of the issue. In South Wales, the sequence of events is very rapid and not always very coherently recorded. I believe I mentioned last week that Messrs. Brogden, of the Llynvi Works, had entered into a compromise with their 4000 men, who are now at work. The terms arranged upon are a five per cent. reduction for a fortnight; for a month afterwards the old rate of wages; and from the end of March to July, an *advance* of five per cent. to be given. The output of coal on the Llynvi Works is about 1,000,000 tons, and there are 1200 colliers, 13 collieries, nine blast furnaces, over 100 mill and puddling furnaces, seven rolling mills, four forges and other appliances, making altogether a compact establishment. Mr. Trump's scheme, on the part of the Blaina Company, has fallen through. Mr. Menelaus (Dowlais) and Mr. Crawshay (Cyrfarthfa), have offered their men fair and reasonable terms, but they have been violently rejected by the trades union delegates who lead the men. There can be no possible doubt that the defection of the Messrs. Brogden has, to some extent, weakened the position

of the masters—not exactly in and of itself, but in respect of the loophole it affords for boasting on the part of the union officials. I have all along held that the masters *must* beat the men if they continued compact, and I yet hold to that opinion—despite the action of Messrs. Brogden. I am the more inclined to this by reason of the admirable piece of generalship shown by the ironmasters last week. It is this: They have abandoned their iron mines in Wales and Monmouthshire, thus throwing 10,000 men at liberty. They say that it does not pay to smelt iron in Wales, seeing that Spanish ore is being arranged for in large lots, and, further, as I write, I hear that *they intend to break into the existing coal trade monopoly between Wales and London*, and so bring down prices. These 10,000 men will thus earn much more money, and will enable their employers to break the "rig" in coal now controlled by about 20 people. Next week I may have something more to say about this part of the question. One thing, at least, is apparent, and that is that capital as well as labor must be organized, *nationally*, if it would fight the battle on equal terms.

The labor market is yet a good deal disturbed. In the Dronfield (Derbyshire) district, the miners ask for 25 per cent. advance. The South Yorkshire Miners' Association met at Barnsley to-day, and decided to ask for an advance equal, it is stated, to about 15 per cent. The joiners at the shipbuilding yards at Redhead & Co.'s, and Softley & Co.'s, South Shields, have struck for an advance of 3s. per week. The Wolverhampton japanners ask an increase of 10 per cent. The brass military ornament button makers, stampers, burnishers, tool makers, etc., have asked 15 per cent. extra. In the forest of Dean the colliery owners have agreed to concede their men 10 per cent. additional, making 40 per cent. within a short time. An agitation is going on among the pit boys in the Bishop Auckland (Durham) district, for effecting the restriction of their working hours to ten per day, in consequence of which two or three pits have been laid off. The strike of the Tyne tug owners has been arranged by the intervention of the Board of Trade. A strike of some sixty men took place last week near Dewsbury, at the Stanley Colliery, and other miners in the same locality seek a large advance, in default of which being given, they will strike. At Carrhouse colliery, near Rotherham, 200 men struck on Thursday, in consequence of some petty dispute with one of the men. The men engaged in the workboard branch of the scissors trade at Sheffield have passed a resolution to give four weeks' notice of advances, to take effect to-day. They are, that all filers receive 15 per cent. on present net prices; all borers to work by statement of 1871, at full statement price; all putters together by same statement, and allow no more than 15 per cent. off. The spring knife cutlers are moving for an advance of 10 per cent. Several employers have already made the concession, but at a meeting held by the men last week it was stated that Mr. George Wostenholm had not fulfilled the promise he made to his workmen last November, at which some "regret" was expressed. The trades unions throughout the kingdom are determined to effect the repeal of the Criminal Law Amendment act, and have given notice that unless members of Parliament vote for its repeal the trades unions will vote against them next election, *regardless of party and of all other questions whatever*. That is what sporting people in this country would term the "straight tip."

The iron market remains very firm in all directions. At Glasgow warrants stand at not less than 138s., and do not at present appear likely to go down, if one may judge by the appearance of the market. In other brands the quotations of a fortnight ago are well sustained, and need not be here repeated. Shipments from Scotch ports continue, somewhat inexplicably, to decrease, the total decrease up to last week for this year being 16,222 tons. The imports of Middlesbro' pig into Grangemouth have also decreased—last week by 300 tons. The production of pig has not materially improved, and fuel has gone up some 2s. or 3s., so that lower prices can hardly be expected at present—in fact, bars and angles are dearer. Plates are dull at former prices, and the dullness previously noted in the malleable iron trade yet prevails. Shipbuilders are fairly busy on old orders. In the Middlesbro' (Cleveland) district the want of fuel has stopped or partially stopped several iron works. Among those in this predicament may be named West Marsh Company, Fox, Head & Co., Britannia Iron Company, North Yorkshire Iron Company, Darlington Iron Company, Darlington New Port Rolling Mills and others. Altogether, it is thought some 300 puddling furnaces will presently be out. On the other hand the following firms are erecting new blast furnaces: Lackenby Iron Co., 1; Bolckow, Vaughan & Co., 1; Whitwell & Co., 2; Cousett Iron Co., 1; Rosedale & Ferry Hill Iron Co., 2; Downey & Co., 2; Tees Bridge Iron Co., 2; Robson, Maynard & Co., 2; T. Richardson & Co., 3, and Hopkins, Gilkes & Co., Middlesbro, 2. During January, foreign shipments of pig from Middlesbro' were 26,722 tons—chiefly to Belgium, Holland, France and Germany. No. 3 is now 120s. 11,991 tons of manufactured iron were exported in January—mainly to the United States, West Indies, Austria, South America and Holland. Prices are similar to those last given, bars remaining at £13. The Barrow-in-Furness locality is rapidly improving—the steel rail mills going night and day on American and Canadian orders, as well as others on Continental account. In West and South Yorkshire business is good throughout, and prices maintain their level. At Sheffield trade is yet good, but there are not wanting slight signs of an approaching slackness. These omens are, however, but very slight, and may at any time be removed. The steel rail, armor plate, and other mills are well employed, and the same remark is equally applicable to the condition of the general steel trade. In cutlery, some American houses are slack. You will doubtless note the wages agitations, given above, in this branch. Owing to fuel and other causes I apprehend that steel is likely to be advanced, in which case I presume renewed trouble would ensue with your custom officials. Swedish irons have again gone up and are now, f. o. b. Gothenburg; Swedish charcoal nail rods, £21. 10s.; wire rods, £22, and bar iron, £21. The edge tool and saw trades are very busy, and in other departments I have no change to record. The bulk of the Birmingham trades are fully engaged, good orders coming to hand from Australia and the United States. Iron tubes are in demand for South America, Canada, etc. Nickel coinage is being made for South American States. Finished iron of all kinds is firm at prices named in my last.

The general metal market has been dull. Prices have consequently receded, although official quotations are unaltered. In the early part of the week copper was tolerably firm, at £85. to £85. 10s. for good ordinary Chili bar, £91. 10s. to £92, for Wallaroo, and £91, cash, for Burra, but though Australian has not materially altered, Chili bar is decidedly weaker, at from £84 to £85 for ordinary to good ordinary brands. English is unchanged. At the Truro ticketing on Thursday, the standard was £113. 5s.; average produce, 6⅛; average price, £4. 5s.; quantity of fine copper, 213 lbs.; and the money value, £14,640. 15s. Tin also has declined. Straits was quoted on Tuesday £143 to £144, cash, but Thursday's sales realized only £140 to £142. 10s., cash, and a month. In spelter and lead no business of any importance has been transacted. Prices for both metals are tolerably steady.

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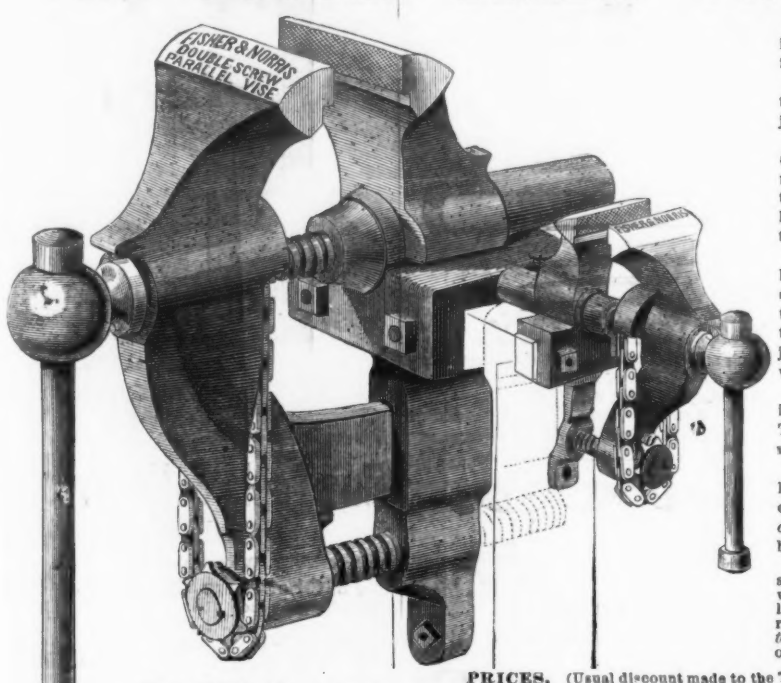
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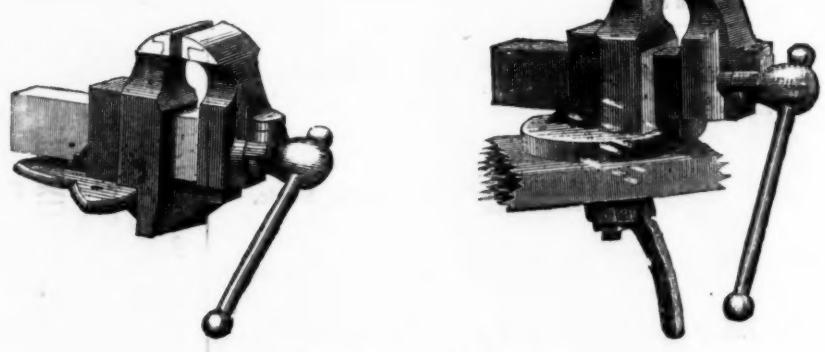
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MANUFACTURERS OF

Box Wood and Ivory Rules, Framing and Firmer Chisels, Drawing Knives, &c.

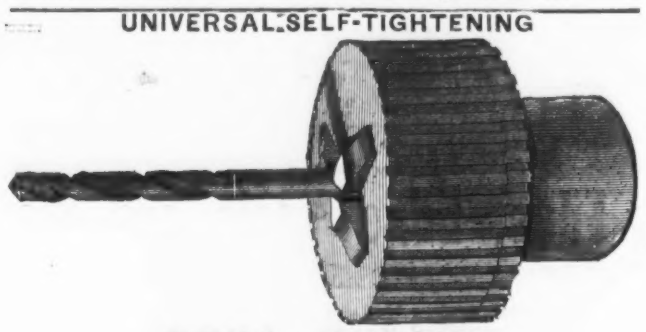
No. 82 Chambers Street, New York,

MANUFACTORY, MIDDLETOWN, CONN.

DEPOT FOR

Middletown Tool Co.,	Ætna Nut Co.,
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Sanseer Manufacturing Co.,	Porter Saw Co.,
Andrews Bros.,	Lewis Armstrong & Colwell.,
Warwick Tool Co.	Campbell & Co.

UNIVERSAL SELF-TIGHTENING



DRILL CHUCK.

(Superior to all others, and the only practical Chuck.)

WARWICK TOOL CO.'S PATENT

☞ All the motions in this Chuck are positive. It has no spring or complicated mechanism to break or get out of order. The Large Chuck is on the same principle precisely, and has an arrangement of the jaws for chucking small articles, for turning, boring, &c. The Small Chuck holds drills from ⅝ shank down. The Large, from ¾ down to 5-16. **Price—Small, $6·00. Large, 8·00.**

The Taylor Manufacturing Company, New Britain Conn.
Hardware Manufacturers. Send for Catalogue.

BUY THE BEST!!

Champion Ice Cream Freezers

With Condon's Patent Self Adjusting SCRAPER AND Ice Agitator.



CRANK,
3, 4, 6, 8 quart.

GEARED
3, 4, 6, 8, 10, 12 quar
16 20, 24, 32, 40 quar

RECOMMENDATION.

Messrs. SIDNEY SHEPARD & CO., Buffalo, N. Y.

Gentlemen: In reply to your inquiry, "How do you like our *Champion Freezer?*" would say, I have tried all the different kinds of freezers in the market, but found none to answer my wants, consequently I had one made at an expense of over two hundred dollars, that suits me. Your *Champion* embraces all the good qualities contained in my own, and I consider it the best I have seen. Yours, respectfully,

BUFFALO, Sept. 5th, 1872. J. MAYER, CONFECTIONER, No. 386 Main Street.

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With or without Convex and Concave Washers.



Jackscrews, Braces, Coffee Mills, Turning Lathes, Clamp Heads and Screws; Parallel Bench Vises, Sash Pullies, Ho House Pullies, Composition Cocks, Bench Screws, Vise Screws Gridirons, Drill Stocks and Bows, Box Chisels, Rivets, Sheaves, Block Pins, Composition Roller and Iron Bushings, Riggers' Screws, Caulkers' Tools, Pump Chambers, Belaying Pins, Marlin Spikes, Malleable Iron Castings, and Genera Hardware.

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We always have on hand a full assortment of

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W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.
John Wilson's Butcher and Shoe Knives.
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Spiegel Iron and Puddled Steel Scrap for Cast Steel Manufacture.

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MANUFACTURERS OF

Wrought Butts, Strap and T Hinges.
Bronzed Butts and Bolts.
Wrought Barrel, Square and Shutter Bolts.
Wrought Chest Handles, Washers, Flush Bolts, &c

79 CHAMBERS ST., NEW YORK.

Factory at New Britain, CONNECTICUT.

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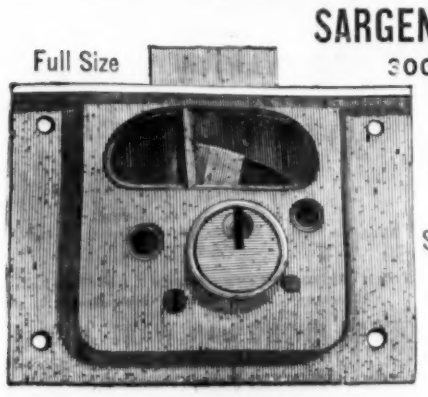
Anvils, Chains, Pocket Cutlery, Guns, Files,

BIRMINGHAM, SHEFFIELD & GERMAN HARDWARE,

Wostenholm's IXL Pocket Knives & Razors, Butcher's Files, Tools, &c.

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Full Size



SARGENT, GREENLEAF & COLE,

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Manufacturers of

PAD LOCKS,

Drawer, Trunk, House,

STORE DOOR AND OTHER LOCKS,

NIGHT LATCHES, &c.,

with Small Flat Keys. Also

BANK and SAFE LOCK

Send for Price List.

Hardware.

PRATT & CO.,

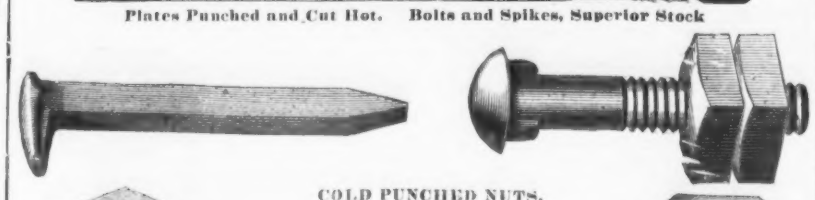
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Manufacture Bar, Angle, and Plate Iron, Spikes and Nails, Railroad Fish Plates, Bolt and Spikes, Railroad and Contractors' Supplies in general, Bolt Blanks, Couch Screws, "Adams Nut Lock."



Plates Punched and Cut Hot. Bolts and Spikes, Superior Stock



COLD PUNCHED NUTS.

All sizes constantly on hand. We use the best Lake Superior Iron, and make a uniform handsome nut. Orders solicited. We make washers a specialty. Also

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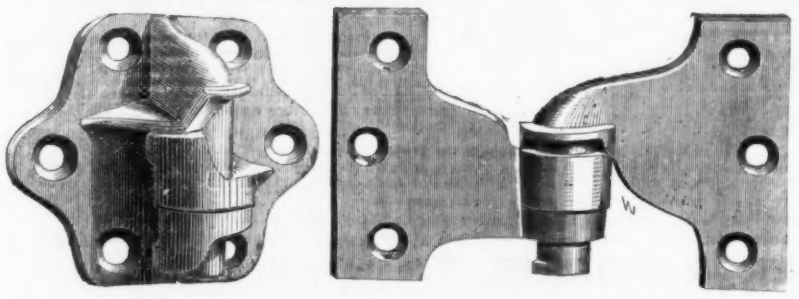
55 CHAMBERS STREET. New York Warehouse for



WOODS CUTLERY COMPANY,

PRATT & CO.,	*Horse Shoe Nails, Nuts, Washers, Crow Bars, Tuyere Irons.*
NATIONAL HORSE NAIL CO.,	*Finished, Polished and Pointed Horse Nails.*
WOOLWORTH HANDLE WORKS,	*Axe, Pick and Sledge Handles, &c.*
SHELTON CO.,	*Tacks, Bed Screws, Carriage, Tire & Store Bolts, &c.*
D. H. GOODELL,	*Lightning & Turn-Table Apple Parers, & Cherry Stoners.*

CLARK & CO.



Surface. *Patented Nov. 3, 1868.* *Mortise.*

THE STRONGEST BLIND HINGES IN MARKET.

Upper and Lower Hinges are alike, locking the top and bottom of the Blinds.

On long Blinds three or more may be used without mismatching sets, and all will fasten. They cannot be broken or closed by the wind.

☞ We would call the attention of the trade to our **Improved Revisible Self-Closing Gate Hinges.** Also our **Improved Axle Pulleys, both Iron and Boxwood Wheel, Sash Locks, Sash Bolts, &c.**

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YALE LOCK MFG. CO.

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Salesroom No. 1 Barclay New York.

FINE FLAT-KEYED LOCKS for all Purposes

RIM and MORTISE STORE DOOR LOCKS,

Heavy Front Door and Vestibule Locks.

Rim and Mortise Night Latches,

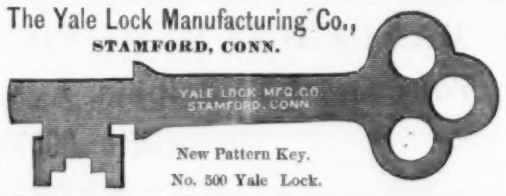
CLOSET, CHEST, DRAWER, DESK and PADLOCKS,

Post Office Lock Boxes and Prison Locks,

Leeds' Gate Fixtures, Field's Shutter Bars, etc., etc.

The Yale Lock Manufacturing Co.,
STAMFORD, CONN.

The Best TUMBLER LOCK Ever Made.



New Pattern Key.
No. 500 Yale Lock.

Samples sent on Application

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LARGEST STOCK AND BEST ASSORTMENT IN THE UNITED STATES OF

SHANK AND SOCKET FIRMER CHISELS.

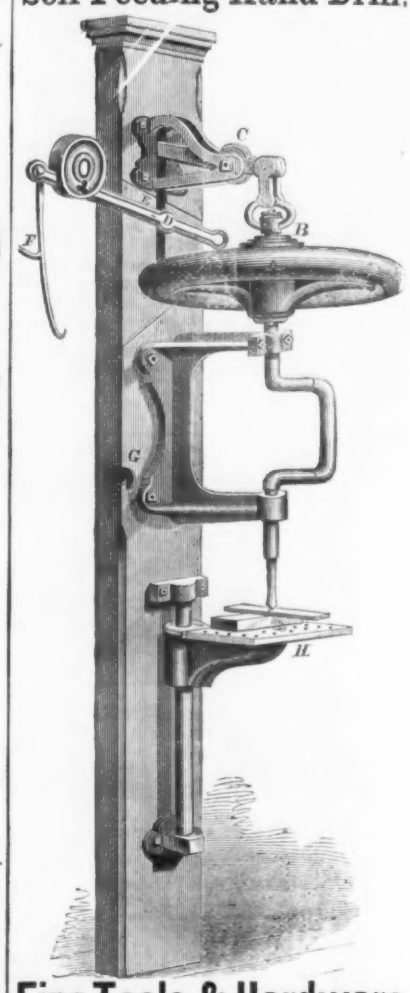
Also, BEST QUALITY SOCKET FRAMING CHISELS.

Hardware.

BIDDLE MANU'FG CO.

PATENT

Self Feeding Hand Drill.



Fine Tools & Hardware Specialties.

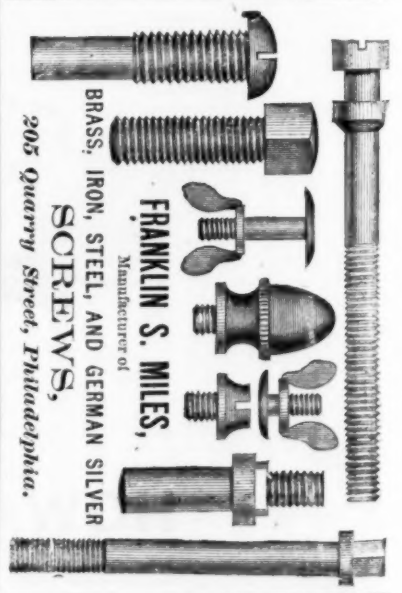
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Tinners' Tools and Machines,
COFFEE MILLS,
CARRIAGE BOLTS,
Steelyards, Dividers, Compasses,
Coes Wrenches,
WROUGHT and MALLEABLE.
STEEL and IRON SQUARES.
And a large variety of
General Hardware.

Send for a Catalogue. *97 Chambers St., N. Y.*



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Manufacturer of

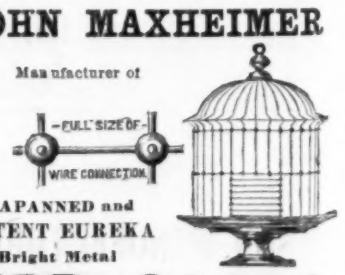
BRASS, IRON, STEEL, AND GERMAN SILVER

SCREWS,

205 Quarry Street, Philadelphia.

JOHN MAXHEIMER

Manufacturer of



JAPANNED and PATENT EUREKA Bright Metal

BIRD CAGES,

Nos. 247 & 249 Pearl Street, NEW YORK.

Putnam's Horse Nails,
Vulcan Horse Nails,
Globe Horse Nails,
Ausable Horse Nails,
Burden's Horse Shoes,
Perkins' and R. I. Horse Shoes,

FOR SALE BY

John I. Brower & Son

288 Greenwich St., N. Y.

New York Wholesale Prices, March 19, 1873.

HARDWARE.

Anvils.

Solid Cast Steel ..... ₱ lb 14c
Wright's.....₱ lb gold 12½c; over 250 lbs. 13c. gold
Armitage's Mouse Hole.....gold 12c
Wilkinson's.....₱ lb gold 11½c
Eagle Anvil Co., ₱ lb 11 cts.....dis 15 @ 15&5 %

Apple Parers.

Turn Table, Lightning, Reading, Conqueror } $8·50 per dozen.
Union.....per doz. $8 00 @ 8 50
Bay State, Paring Coring & Slicing.... 13 50 @ 15 00
Skeleton " " " 8 00
Climax Slicer.....9 00
Bay State Peach Parer.....11 00 @ 11 50
Lightning Peach Parer.....11 00 @ 11 50
Peach Stoner & Halver..... 6 00

Augers and Bits.

Snell Mfg. Co.....dis 15 %
Russell Jennings.....dis 10 %
Douglass Mfg. Co., Extra.....dis 25 %
" " No. 1.....dis 25&5 %
" " Hollow Augers.....dis 25 %
Cushman's Expanding Hollow Auger . dis 20&10 %
Ives'.....dis 25 %
" Hollow Augers.....dis 30 %
" Expansive " .....dis 30 %
" Expansive Bits.....dis 25 %
Andrews' Bitts.....dis 30 %
Cook's Patent Augers.....dis 40 %
" " Bits.....dis 25&10 %
Shepardson's Double Cut Bits.....dis 20 %
Griswold's Patent.....dis 20 %
Cast Steel Cut Augers.....new list dis 25&10 %
Cast Steel Auger Bits .....dis 25&10 %
Long Augers.....new list dis 30 %
Bonney's Patent Hollow.....$48 per doz.—dis 25 %
Stearns' Patent Hollow.....$48 per doz.—dis 30 %
Morse's Bit Stock Drills.....dis 20 %

Axes.

Blood's.....$12 50 @ 14 00
Hunt's.....₱ doz 15 00 @ 17 50 net @ dis 5 %
Collins'.....₱ doz 12 00 @ 16 00 net @ dis 5 %
Hurd's.....₱ doz 12 50 @ 13 50
Simmons'.....₱ doz 12 00 @ 13 00
Morris'.....₱ doz 12 50 @ 13 50
Red Jacket.....₱ doz 12 00 @ 12 50
Mann's.....₱ doz 13 00 @ 14 50
Powell Tool Co., "Peerless"....₱ doz 13 00 @ 14 50

Balances.

Chatillon's, Frary's, Morton's } new list, dis 15 %

Bands.

Plated.....add 10; dis 5 %
Iron.....dis 5 %
Brass....(Plated list).....dis 5 %
Oroide.....add 15; dis 5 %

Bells.

Hand, Light Brass.....dis 55&10 %
White Metal.....dis 45&10 %
Globe.....dis 20 %
Abbe's .....dis 10 & 10 %
Taylor's Patent Door.....net
Western Gong.....net
Brook's Crank.....net list.
" Pull.....dis 15 %
Hart Mfg. Co., Crank and Pull.....net list
Cow—Common Wrought.....new list dis 33⅓ %
Western.....new list dis 33⅓ %
Kentucky "Star"....new list dis 10&10 %
Dodge's Genuine Kentucky.....new list dis 25 %
Yaw's Genuine.....dis 20 %

Bellows.

Blacksmiths'.....dis 10 %
Moulders'.....dis 10 %

Blind Fasteners.

Van Sand's.....₱ gross $14 00
Washburn's Patent.....₱ gross 14 00
Merriman's .....add 35 @ 40%

Blind Staples.

Boardman's Patent, ⅛ in. and larger.....₱ lb 37½c
" ⅜ in..... " 42 c

Bolts.

Cast Iron Barrel, Shutter, &c.....old list dis 30&10 %
Wrought Iron Barrel.....net
" " Square .....dis 10&10 %
Carriage and Tire, Common.....dis 60&10 %
Carriage and Tire, Norway Iron.....dis 40 %
Star, Philadelphia.....dis 40 %
Eagle, Philadelphia.....dis 40 %
Philadelphia Pattern, P. S. & W.....dis 50&5 %
Carriage and Tire, R. B. & W.....dis 50&5 %
Plow, R. B. & W.....
Stove R. B. & W.....dis 10 %
Union Nut Co.....
Machine.....dis 10 @ 15 %

Boring Machines.

Kellogg's.....dis 10 @ 15 %
Snell Mfg. Co., Rice's Patent.....dis 15 %
Snell Mfg. Co., Regular.....dis 15 %
Douglas Mfg. Co.....dis 20 %
Hovey's Angle.....$6 00 @ 6 25
Hovey's Upright.....4 25 @ 4 50
Morticing Machines, each.....$18 00

Braces.

Barber's Patent.....dis 30&10 %
Wilson Mfg. Co.....net @ add 5 %
Spofford's Patent.....dis 37½ %
Noble's Patent.....dis 33⅓ %
Bartholomew's.....dis 10&10 %
Bartholomew's Patent.....dis 25 %
Q. S. Backus & Co.....dis 30&10 %

Bung Hole Borers.

Common and Ring.....dis 20 %
Enterprise Mfg. Co .....dis 20 %
Ives' Tap Borers.....dis 20 %

Butchers' Cleavers.

Bradley's.....dis 15 %
Beatty's.....new list dis 10 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

Hart Mfg. Co.....dis 50&10 %

0	1	2	3	4	5	6
$25·25	$29·75	$30·25	$38·75	$42·55	$48·50	$54·00

Butts.

Wrought Brass.....new list dis 25 %
Cast Fast Joint Narrow.....dis 15 %
" " " Broad.....dis 30 %
Cast Loose Joint.....dis 40 %
" " " Mayer.....dis 30 %
" " " Parliament.....dis 30 %
Loose Pin Butts, Plain.....dis 25 %
" " Japanned.....dis 25 %
" " National.....dis 40 %
Wrought Fast Joint, Narrow.....dis 10 %
Wrought Broad.....dis 15 %
" Loose Joint.....dis 15 %
Wrought Table and Back Flaps.....net
Palmer Blind Butts.....dis 30&10 %
Nicholson Blind Butts.....dis 30 %
Parker's Blind Butts.....dis 30 %
Clark's Blind Butts.....dis 30 %
Seymour's.....dis 30 %
Shepard's.....dis 30 %
Garretson's.....dis 40 %
Standard.....dis 30 %
Union Mfg. Co.'s Drilled Fast, Narrow, new list dis 25 %
" " " " Broad.....dis 25 %
" " " " Loose.....dis 35 %
Whitney & Walt's Bronze Metal.....dis 20 %

Caps—Percussion per 1000.

G. D.....40c
Ely's E. B. .....1-4s, 67½c; 1-10s, 75c, gold
" Double Waterp'f, 1 4s, $1·57½; 1-10s, $1·65c, gold
Colt's.....1-4s, 82½c; 1-10s, 90c, gold

Cartridges.

Metallic .....dis 45 %

Cards.

Horse and Curry.....dis 20 %
Cotton.....dis 25 %
Wool .....dis 20 %

Casters.

Iron and Wood Wheel Plate.....new list dis 20&10 %
Brass Wheel Plate.....new list dis 20&10 %
Porcelain Wheel Plate.....new list dis 20&10 %

Chain.—By the Cask.

English Coil.....net gold

₱ lb.	13¾	10¾	9⅝	9c	8¾	8⅜
	3-16	¼	5-16	⅜	7-16	½

Trace, 6½-10-2.....₱ pair, gold, 65c
Trace, 7-10-2.....₱ pair, gold, 76c
Galvanized Pump Chain.....₱ lb 14c
German Halter Chain.....new list, gold, dis 10 %
German Coil.....new list, gold, dis 10 %
Jack Chain, Iron.....dis 35 @ 40 %
" " Brass.....dis 20 @ 25 %

Chalk.

White.....₱ gross, 50c
Red.....₱ gross, 75c
Blue.....₱ gross, 85c
Crayons.....₱ gross, 14c

Cherry Stoners.

"Family" ..... ₱ doz $9 00

Chisels.

Socket Firmers.....dis 60&5 @ 60& 10 %
Socket Framing.....dis 60&10 %
Socket Corner.....dis 60&10 %
Tanged Firmers .....dis 40 @ 40&10 %
Butcher's.....$5 50 to £ gold—new list
Spear & Jackson's.....$5 50 to £ gold—new list

Clips, Axle.

Norway or Best.....dis 20 @ 30 %
Superior .....dis 40&5 %
"Star," Superior, Philadelphia .....dis 45&5 %

Coal Shovels.

Iron Handled.....₱ doz, $ 85 @ 1 25
Wooden Handled.....₱ doz, 1 00 @ 2 00

Coal Hods.

Smith, Burns & Co.....dis 25 %

No.	14	15	16	17	18	
Japanned,	$9·00	9·75	10·50	12·00	13·50	per doz
Galvanized,	13·00	14·50	15·50	17·50	19·50	"

Cocks.

Brass Racking.....dis 10&10 %
Lock & Globe.....dis 10 %

Coffee Mills.

Common Board and Box.....dis 10&5
Better Grades.....dis 10 %
Increase Wilson's.....new list.....dis 10 %
French Steel.....dis 10 @ 20 %
"Champion".....dis 20 %
Swift's.....dis 20 %

Compasses and Dividers.

Bemis.....dis 15&15 @ 20&5&15 %
Excelsior.....dis 30 %
Peck, Stow & Wilcox.....dis 20 %

Coopers' Tools.

Bradley's.....dis 15 @ 20 %
Chas. E. Little.....dis 15 @ 20 %

Corn Knives and Cutters.

Bradley's.....list net

Crucibles.

Gautier & Co.....₱ No. 5½c

Curry Combs.

Hotchkiss' and Kellogg's, Iron and Brass.....dis 10 %
Fitch's.....dis 20 %
Ruggles'.....dis 15 @ 20 %
Rubber.....₱ doz., $9 00—dis 10 %

Curtain Pins.

Silvered Glass.....dis 40&10 %

Cutlery.

American Table.....
American Pocket.....dis 15 %

Door Springs.

Torrey's Patent.....$7 50 ₱ doz—dis 20&10 %
J. Palmer.....₱ doz $5 50

Drawing Knives.

.....dis 60 @ 60&10 %
Bradley's.....dis 25 %

Drills.

Ingersoll's Ratchet (Wrought Iron).....dis 25 %
No. 1, 12-in., $6 50 each; No. 2, 16-in., $8 75 each; No. 3, 20-in., $11 00 each.

Egg Beaters.

Monroe's.....₱ doz net $8 25 @ 8 50
Ashley's.....₱ doz net 2 25 @ 3 60
Earle's Patent.....₱ doz net 5 50 @ 6 00
Pratt's Aerating.....dis 10 %
Dover.....₱ doz net $6 00

Emery.

Genuine Chester—Regular Nos. } ₱ lb 8c
" Flour and FF .. } ₱ lb 5c } dis 5 %
Washington Mills—Regular Nos. } ₱ lb 8c
" Flour. } ₱ lb 5c

Enameled and Tinned Ware.

Kettles .....dis 10 %
Sauce Pans, Glue Pots, &c.....dis 5 %

Faucets.

Cork Lined, Wood.....dis 50 @ 50&10 %
Fenn's.....dis 50 %
" Cork Stops .....dis 40 %
Star.....dis 55&10 %
Frary's Patent Petroleum.....dis 10 & 10 %
Taylor's Pattern Petroleum.....dis 20&10 %
Wood and Metallic".....dis 40 %

Files.

American Best.....$5 00 to £ net
Nicholson—Mill.....5 00 to £ net
" Others.....5 00 to £ net
" Tapers (single cut)... 5 00 to £ net
J. & Riley Carr's,.....5 50 to £ gold
Stubs'.....8 00 @ 8 25 to £ gold
Butcher's.....5 50 to £ gold
Spear & Jackson's.....5 50 to £ gold
Hargreaves, Smith & Co.'s.....4 75 to £ gold
Jowitt's.....5 25 to £ gold
"Western".....5 00 to £ net
W. K. & C. Peace's "Imperial".....5 25 to £ gold
R. Ibbotson.....5 00 to £ gold
Beam & Murray, "Cyclops".....4 85 to £ gold
Fisher,s.....4 75 to £ gold
Goodlad's.....4 00 to £ gold
Moss & Gamble.....5 25 @ 5 50 to gold

Fluting Machines.

Acme.....$7 00 each net
Cole.....5 75 each net
Manvill, No. 2.....7 00 each net
Knox, with 4-inch Rolls.....5 00 each net
" " 6 " " .....6 00 each net
O. K.....6 50 each net
Excelsior, No. 1.....4 75 each net
" " 2.....6 50 each net
Diamond.....7 50 each net
Climax, 7-inch Rolls.....8 00 each net
" 4½ " " .....6 50 each net
Empire.....4 00 each net
Eureka, No. 1, 7-inch Roll.....8 00 each net
" No. 2, 5-inch Roll.....6 00 each net
K. F. M., 4½ inch Roll.....5 50 each net
" 6 inch Roll.....6 00 each net
Carpenter's Self-Heating.....13 50 each net
Fairy, Self Heater.....13 50 each net
National, 5-inch Rolls.....5 00 each net
Myer's Fashion Finter, 4½ inch Rolls.....3 50 each net

Fry Pans.

Tinned—.....dis 20 %
₱ doz.....$3·00 3·25 3·62 4·00 4·50 5·00 5·50 6·00 7·50
No.....0 1 2 3 4 5 6 7 8
Peck, Stow & Wilcox.....dis 20 %
Smith, Burns & Co., "Excelsior" Polished..dis 20 %
$3·70 4·00 4·70 5·30 6·00 7·00 8·00 9·00 per doz.
No. 1 2 3 4 5 6 7 8.

Hammers.

Maydole's.....new list net
Cheney's.....new list net
Verree.....dis 5 %
Yerks & Plumb.....new advanced list dis 5 @ 10 %
Emmet Hammer Co.....dis 10 %

Handles.

Hammer and Hatchet.....dis 10 %
Quakertown, Axe, Pick and Sledge .....dis 10 %
" Hammer and Hatchet.....net

Harness Snaps.

Judd's.....dis 30 %
Fitch's.....dis 30 %

Hatchets.

Isaiah Blood.....dis 10 %
Shingling, Nos. 1 2 3..... ₱ doz $7 50 8 00 8 50
Claw, " 1 2 3.....₱ doz 8 50 9 00 9 50
Lathing, " 1 2 3.....₱ doz 7 50 8 00 8 50
Hunt's .....net
Shingling, Nos. 1 2 3.....₱ doz $7 25 8 00 8 75
Claw, " 1 2 3.....₱ doz 7 75 8 50 9 25
Lathing, " 1 2 3.....₱ doz 7 50 8 25 9 00
Hurd's.....dis 20 %
Shingling, Nos. 1 2 3.....₱ doz $8 00 8 50 9 00
Claw, " 1 2 3.....₱ doz 9 00 9 50 10 00
Lathing, " 1 2 3.....₱ doz 8 00 8 50 9 00
Newark Edge Tool Co's.....dis 25 %
Shingling, Nos. 1 2 3.....₱ doz $6 50 7 00 7 50
Claw, " 1 2 3.....₱ doz 7 25 7 75 8 25
Lathing, " 1 2 3.....₱ doz 6 50 7 00 7 50
Yerks & Plumb.....dis 10 %
Shingling, Nos. 1 2 3.....₱ doz 7 00 7 50 8 00
Claw, " 1 2 3.....₱ doz 7 50 8 00 8 50
Lathing, " 1 2 3.....₱ doz 7 00 7 50 8 00
Simmon's.....dis 10 @ 15 %
Shingling, Nos. 0 1 2 3...₱ doz 7 50 8 00 8 50 9 00
Claw, " 1 2 3..₱ doz 9 00 9 50 10 00
Lathing, " 1 2 3..₱ doz 8 00 8 50 9 00
Broad, " 1 2 3..₱ doz 9 00 10 00 12 00
" " 4 5 6...₱ doz 14 00 16 00 18 00
" " 7 8...₱ doz 20 00 22 00
J. P. Verree & Co.....dis 5 %
Shingling, Nos. 1, 2, 3.....₱ doz $7 00 7 50 8 00
Claw, " 1, 2, 3.....₱ doz 7 50 8 00 8 50
Lathing, " 1, 2, 3 ....₱ doz 7 00 7 50 8 00

Hinges.

Wrought Strap and T.....dis 15 %
Providence Plate.....6 & 8 in. list 11c } over 8 in. " 9½c } .....dis 5 %
Screw Hook and Strap..{ 8, 10, 12 in. 8¾c } 14 to 36 in. 7¾c } .....net

Hoes

Solid Shank, C. S.....₱ doz $8 00—dis 20 @ 25 %
Socket, C. S.....₱ doz 9 00—dis 20 @ 25 %
Riveted Eye.....₱ doz 5 00—dis 20 @ 25 %
Planters'—Winsted.....add 10 %
Scovill.....add 33⅓ %
Scovill Pattern (Winsted).....add 20 %

Hooks.

Belt.....dis 50 %
Bench.....₱ doz net $5 00 @ 8 50
Wardrobe; Japanned.....new list dis 10&10 %
Hat and Coat " .....new list dis 10&10 %
Wrought Staples and Hooks and Staples.....dis 60 %
Wrought Hasps and Staples and Hasps, Hooks and Wrought Staples.....dis 60 %
Screw Hooks and Eyes, revised list.....dis 60&5 %

Horse Nails.

Putnam's.

No.	5	6	7	8	9	10
	32c	28c	26c	25c	24c	23c

In lots 1000 lbs. dis. 5 %.
Ausable.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs. 5 % discount
Brundage.

No.	5	6	7	8	9	10
	29	26c	24c	23c	22c	21c

In lots of 500 lbs., dis 5 %
American Pressed.

No.	5	6	7	8	9	10
	22c	20c	20c	20c	20c	20c

Perkins Finished, (ready to drive).

No.	5	6	7	8	9	10
	29	26	24	23	22	21c

Buffalo Forged.

No.	6	7	8	9	10
	28c	26c	25c	24c	23c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished), Extra Finish.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs., dis 5 %.
Vulcan.

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs., 7½ % discount.
New London Horse Nails.

No.	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c
WB.	29c	27c	26c	25c	24c

In lots of 1000 lbs., dis. 5 %.
Star Brand.....₱ lb 16c
Morgan 16c

Horse Shoes.

Burden.....₱ keg, $6 25
R. I. Horse Shoe Co., Perkins' Pattern ..₱ keg, 6 25
" " R. I. Pattern.....₱ keg, 6 75
Mule Shoes.....₱ keg, 7 25

Kettles.

Enameled.....dis 10 %
Brass.....₱ lb 55c
In lots of 500 lbs. .....₱ lb net 50c

Knives.

Butcher and Shoe, "Ames'".....dis 15 %
Butcher and Shoe, "Wood's".....dis 5 % cash
Hay and Straw, "Wadsworth's".....dis 15 %

Knobs.

Base—Common.....net
" Plush Tip.....dis 10 %
Elastic End.....reduced list...dis 10&10 %

Lanterns.

Brady's Patent.....dis 10 %
Ætna.....dis 10 %
Yankee .....dis 10 %
De Beque .....dis 10 %

Locks and Latches.

Cabinet—Eagle.....dis 25 %
Cabinet—Gaylord.....dis 25 %
Trunk.....dis 10 %
Continental.....dis 15 %
Shepardsons .....dis 25 %

Meat Cutters.

Dixon's (P. S. & W).....dis 5 %

No.	1	2	3	4
₱ doz.	$14 00	$17 00	$19 00	$20 00

Hales'.....dis 10 %

o.	11	12	13
₱ doz.	$27 00	$31 00	$42 00

Perry's Champion (P. S. & W).....dis 5 %

No.	280	300	400
₱ doz.	$22 00	$27 00	$40 00

Woodruff's (P. S. & W).....dis 5

No.	100	150
₱ doz.	$15 00	$18 00

American.....dis 25 @ 25&5 %

No.	1	2	2½	3	4	5
Each	$6 00	$9 00	$14 00	$15 00	$30 00	$75 00

Molasses Gates.

Stebbins' Pattern .....dis 50&10 %
Tinned ends .....dis 10&10 %
Weed's Patent Self-Boring .....dis 15 %
" without Auger Bit.....dis 10 @ 50 %
Patent Self-Measuring.....per doz $42 00—dis 20 %

Mouse Traps.

Wood Choker.....18c ₱ doz holes

Nails.

10d Cut (Standard).....₱ keg $5 25

Nuts and Washers.

Cold Cut Nuts .....3c off list
Hot " " .....3c off list
Washers, (as to quality).....less 3c @ 6c off list

Oil Stones.

Washita No. 1.....₱ lb 22c @ 25c
Washita Slips.....₱ lb 44c @ 50c
Hindostan.....₱ lb 7c
Hindostan Slips.....₱ lb 10c net

Oilers.

Olmsted's.....dis 25&10 %
Broughton's.....dis 25&5 %
Common Zinc, Brass and Copper.....dis 20 %

Picks.

Washoe R. R. Nos.	1	3	3	4	5
per doz.	$14·00	15·00	16·00	17·00	18·00
Washoe Coal, "	$8·50	9·00	10·00	11·00	13·00	15·00

Picture Nails and Knobs.

Richards' Patent.....dis 40 @ 40&10 %

Planes.

Auburn Bench and Fancy.....dis 15 %
Bailey's Patent Adjustable.....dis 15&10 %
Howland's Bench and Fancy.....dis 15 %
Chapin's " " .....dis 15 %
Chapin's, 2d quality.....dis 15&5 %
Sandusky Tool Co.....dis 15 %
"Ogontz".....dis 15&5 %
Plane Irons.....hst net
" " Butcher's.....$5 50 to £ gold—new list
" "Spear & Jackson's.$5 50 to £ gold—new list
" " Sandusky Tool Co.....list net

Pumps.

Douglas Cistern, etc.....new list dis 25 %
" S. & F.....new list dis 20 %

Rakes.

Cast Steel.....dis 25

$8 00	$9 00	$10 00	$11 00
8	10	12	14 teeth.

Razor Straps.

Genuine Emerson (B. F. Badger).....dis 33⅓ %
Hunt's.....dis 25&10 %
Chapman.....dis 10 @ 15 %

Rivets.

Iron and Tinned.....dis 25 %
Copper Rivets and Burrs.....net @ dis 10 %

Rods.

Stair.....new list dis 25 %
American Patent.....dis 25 %

Rope. Manufacturers' List.

Manila.....½ inch and larger ₱ lb 18c
" .....⅜ inch ₱ lb 18½c
" .....¼ & 5-16 inch ₱ lb 19c
" Lath Yarn.....₱ lb 19c
" Hay Rope.....₱ lb 18½c
Jute.....₱ lb 12c
Sisal.....½ inch and larger, ₱ lb 15½c
" .....⅜ inch ₱ lb 16c
" .....¼ & 5-16 inch ₱ lb 16½c
" Hay Rope.....₱ lb 16c

Rules.

Boxwood and Ivory.....dis 60&10 %

Sad Irons.

.....₱ lb 5½ @ 6c

Sand Paper—dis 7½ @ 10 %

Beader & Adamson's (Flint) 00 to 1½...$4 50 ₱ ream
" " " 2, 2½ &3... 5 00 "
Assorted.....4 50 "
Star.....₱ ream $3 50
Emery.....₱ ream $7 00 @ 12 00

Sash Locks.

Clark's.....dis 25 @ 30 %
Ferguson s.....dis 20 @ 25 %
Champion.....per gross $13 00 @ $15 00
Norwich.....dis 15 %

Sash Weights.

Solid Eyes.....₱ lb 3½c

Sausage Fillers.

Perry's (P. S. & W).....dis 5 %

No	1	0
₱ doz.	$15 00	$21 00

Saw Rods.

.....list net

Saws.

Spear & Jackson's.....$4 50 to £ gold
John Spear.....$5 60 to £ gold
Am. Saw Co.....new list
Perforated Cross Cuts, all kinds.....68c per foot
Inserted Tooth.....dis 10 %
All else.....dis 12½ %
Disston's Cross Cut, Circular and Mill.....dis 14⅛ %
Hand, Panel, Back, &c.....dis ½ %
Butcher Bow Saws, Butcher Saw Blades, Hack Saw Blades.....dis 12½ %
H. W. Peace's Circulars.....dis 10 %
Other kinds.....dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular.....new 1st dis 10 %
Lightning.....new list..dis 20&12½ %

Scales.

Fairbanks'.....new list....dis 15 @ 20 %
Howe's .....dis 15&5 %
Shattuck's Counter and Union.....dis 15 %
National Platform.....dis 25 %
Eureka.....dis 25 %
Scale Beams.....dis 20 %
No. 1 300 to 1200 lbs.....90c. ₱ cwt
No. 2 " " .....75c ₱ cwt

Screws.

American and National Screw Cos.
Iron.....revised list dis 50 %
Round Head Iron.....dis 40 %
Brass.....dis 40 %
Round Head Silver Capped.....new list dis 20 %
Patent Gimlet Point Coach and Hand Rail..dis 10 %
Bed.....list ne

Scythes.

Blood's German Steel, Grass.....₱ doz $ 9 00
" Cast " " .....₱ doz 10 00
" Silver " " .....₱ doz 11 00
" German " Grain.....₱ doz 13 00
" Cast " " .....₱ doz 14 00
" Red Rover.....12 00
" Young America.....9 50
" Silver Clipper.....12 63
Scythe Snaths.....dis 20 %

Shears.

Cast Steel.....dis 60 @ 60&5 %
Seymour's.....dis 50 %
Conn. Cutlery Co., new brand.....dis 60 %

Shovels and Spades.

Ames.....list July 1, '70, list net @ dis 2½ %
Rowland.....new list Feb. 8, '73, dis 20 %
Old Colony.....dis 2½ %

Shovels and Tongs.

Iron Head.....list net
Brass Head.....dis 5 %
Polished Steel.....new list dis 15 %

Slates.

Square Frames, R'd Corn'd, by case.....dis 60&10
Less than a case.....dis 50 @ 55 %
Oval Frames, by case.....dis 40 @ 40&10 %
Less than a case.....dis 30

Spoons.

Iron.....new advanced list ....dis 10 %
By the case.....dis 20 %
Britannia.....dis 25&10 %
Plated A 1.....dis 25&5 %
German Silver.....add 5 %
Tinned (P. S. & W.)—
Teas.....$1.50 ₱ gross, net
Tables ..... 2·75 "

Stocks and Dies.

.....dis 15 %

Stove Polish.

Joseph Dixon's.....₱ gross $6 00 @ 6 25
Gold Medal.....₱ gross $5·5

Squares.

Steel.....dis 50 %; full cases, dis 50& 0
Iron.....dis 50 %; full cases, dis 50&10
Nickel Plated.....add $2 50 @ $4 00 ₱ doz net
Try Squares and T Bevels.....dis 40&10
Star Try Squares and Bevels .....dis 30 %

Tacks.

Full Weight American Iron.....dis 40&7½ %
Half Weight American Iron.....dis 70&7½ %
Carpet.....dis 7½ %
Brads American.....dis 50&7½ %

Finishing Nails	½	⅝	¾	⅞	1 in. and over
₱ lb	25	20	17	14	12½c dis 7½ %
Trunk and Clout	½	⅝	¾	⅞	1 in. and over
₱ lb	25	20	17	14	12½c dis 7½ %

Copper Tacks.....₱ lb 56c—dis 7½ %
Iron Shoe Nails, ₱ lb 4-8 and longer, 10c;
3⅛-8, 10½c .....dis 7½
Double Pointed.....new list dis 33⅓

Tapes, Measuring

American Flask and Cap Co.....dis 10&10 %
Eddy's.....dis 10&10 %

Toe Calks.

.....per lb 12c

Tobacco Cutters.

Champion.....dis 20
Peck, Stow & Wilcox.....dis 10 %

Traps.

Newhouse .....dis 17½ %
Hotchkiss.....dis 20 %
Peck, Stow & Wilcox.....dis 30 %
Blake's Patent.....dis 15 @ 20 %

Vises.

Trenton Vises, Solid Box.
30 to 110 lbs.....17c
111 to 160 lbs.....18c
160 and over.....21½c
Peter Wright's.....₱ lb 15½c, gold
Wilson's Solid Box.....dis 10 %
39 to 160 lbs.....18c
160 and upward.....21c
Backus & Union, Parallel.....dis 25 %
Buffalo, Parallel.....new list dis 15 %
Fisher & Norris' Double Screw Par....dis 15 @ 15&5%

Wire.

Bright and Annealed.....Nos. 0 @ 18 dis 20 @ 25 %
" " .....Nos. 19 @ 26 dis 30 @ 35 %
" " .....Nos. 27 @ 36 dis 35 @ 40 %
Coppered.....Nos. 0 @ 18 dis 15 @ 20 %
Galvanized.....dis 35 @ 40 %
Tinned.....dis 17 @ 20 %
Cast Steel.....net @ 5 %
Tinned Broom Wire.....dis 20 @ 25 %
Galvanized Telegraph, Nos. 8 & 9.....₱ lb 10½c
" " " 10 & 11.....₱ lb 11c @ 12c
" " " 12.....₱ lb 11½c @ 12½c
Annealed Fence, Nos. 8 & 9.....dis 20 @ 25 %
" Grape, " 10 to 14.....dis 20 @ 25 %
Fence Staples.....₱ lb 10c

Wrenches.

Baxter's Adjustable "S".....dis 20 %
Baxter's Diagonal.....dis 20 %
Collins & Co.'s.....new dis list 30 %
Coes' Genuine.....dis 30 %
Coes' Pattern (Wrought).....dis 45 %
" " (Malleable).....dis 50 %
Lindsay's Patent.....dis 25 %
Taft's Pattern.....dis 60&15 %
Davis' Patent Duplex.....dis 40 %

METALS.

IRON.—DUTY: Bars, 1 to 1¼ cents per lb., Sheet, Band, Hoop and Scroll, 1¼ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron.

AMERICAN.

Foundry No. 1.....₱ ton $50 00 @
Foundry No. 2.....40 00 @ 48 00
Gray Forge.....40 00 @ 43 00
White and Mottled.....

SCOTCH.

Gartsherrie.....@ 60 00
Coltness.....@ 65 00
Glengarnock.....56 00 @ 57 00
Eglinton .....55 00 @

Bar Iron.

Am. Refined, at mill.....₱ ton, 100 00 @

Rails.

Welsh, gold .....₱ ton, 70 00 @ 72 00
American, at works, currency. " 82 50 @ 85 00
Old Rails, D. H.....currency " 58 00 @ 60 00

Scrap Iron.

Wrought Scrap, from yard... " 57 50 @ 60 00

Bar Iron from Store.

Common Iron.

⅛ to 2 in. round and square	₩ ton	$100 00
⅝x9-16 in. " "	"	105 00
⅝ in. " "	"	107 50
⅞ to 3 in. " "	"	105 00
o 6 in. wide x ⅜ and 1 in. thick	"	100 00
⅛ to 6 in. wide x ⅛ & 5-16 in. thick	"	105 00
and 1⅛ in. x ⅛ and 5-16	"	107 50
Swedish Iron.		
1⅛x⅛ and ⅛	₩ ton	160 00
1⅛x⅛ to ⅛, and ⅛ square	"	155 00
1⅛ to 5x⅛ to ⅛ and ⅞ to 2-in. square	"	150 00
6 to 12x⅛ and ⅛	"	160 00
Refined Iron.		
⅛ to 2 in. round and square	"	107 50
1 to 6 in. wide x ⅛ to 1 thick	"	107 50
1⅛ to 6 in. wide x ⅛ and 5-16 thick	"	112 50
1 and 1⅛ x ⅛ and 5-16	"	115 00
Large Rounds.		
2⅛ to 2⅝, round and square	"	125 00
3, 3⅛ and 3⅜ in.	"	130 00
3⅝ and 4 in	"	127 50
Rods—⅛ and 11-16, round and square	"	112 50
⅛ and 9-16, " "	"	117 50
7-16, " "	"	120 00
⅜, " "	"	125 00
5-16, " "	"	130 00
⅛ " "	"	135 00
3-16, " "	"	155 00
Band Iron.		
1 to 6 in. x 3-16 to No. 12	"	125 00
Horse Shoe Iron.		
⅛ and ⅞ x ⅜, to ⅛	"	127 50
1 x ⅜, to ⅛		
Ovals, Half Ovals and Half Rounds.		
⅛ to 1⅛	₩ ton	132 50
⅛ and 11-16	"	137 50
⅛ and 9-16	"	142 50
7-16	"	
⅜	"	
Nail Rods		
UB	₩ ℔	9½c
Norway Shapes		
⅛ to 2 in x ⅛ to ⅛	"	9¾c
⅛ to ⅛ square	"	9¾c
Norway Bar.		
⅛ to 2 in. square	"	c
Spring Steel.		
1 to 4 in. wide	"	9½c
Tire Steel		
⅛ to 1⅛ x ⅛ & 5-16	"	9¾c
⅛ & 1 x 3-16	"	9¾c
⅛ & 1 x ⅛	"	10¾c
Toe Calk Steel		
⅛ to ⅛ x ⅜ to ⅛	"	8¼c
Plow Steel.		
6 to 16 wide	"	9½c
Sleigh Shoe Steel		
⅛ to 1⅛ x ⅜ to ⅛ Stock	"	7¾c
Hoops, ⅛ x No. 22	₩ ton	180 00
" ⅛ x No. 20	"	150 00
" ⅛ x No. 19	"	145 00
" 1 and 1⅛ x No. 18	"	140 00
" 1⅛ to 2 and 1x1⅛ x No. 13 & 14	"	135 00
Scroll Iron—⅛x12	"	160 00
" " 10	"	155 00
" " 3-16	"	140 00
" ⅛	"	145 00
⅛ x 14	"	160 00
" 12	"	145 00
" 10	"	150 00
" 3-16	"	145 00
" ⅛	"	140 00
⅛ x 14	"	150 00
" 12	"	145 00
" 10	"	140 00
" 3-16	"	135 00
" ⅛	"	132 50
⅞ x 14	"	145 00
" 12	"	140 00
" 10	"	135 00
" 3-16	"	132 50
" ⅛	"	130 00

Sheet Iron.

	English.	American
ob. 10 to 20 ₩ ℔	6¾c	8c
21 to 24 "	7¼c	8¾c
25 to 26 "	7¾c	8¾c
27 "	7¾c	8¾c
28 "	8c	9c
30 "	8¼ @ 9c	
Galvanized, 10 to 20 ₩ ℔		12c
21 to 24 "		13c
25 to 26 "		14c
27 "		15c
atent Polished "		15 c
Russia Nos. 8 @ 11, "		20c @ 22 c
" Nos. 12 @ 16, "		20c @ 22 c
Belgian "		13 c

One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.

4¼	5	5¾	6	7 inch.
$3 75	4 25	5 25	5 25	6 50 per doz.

RUSSIA IRON.

4¾		5¾	6	7 inch.
$7 00	13 00	00	13 00	14 00 per doz.

Brass.

ROLLED AND IN SHEETS.

(Brown & Sharp's Gauge.*)

For the purchase of 100 pounds and over at one time:

HIGH BRASS.

All Nos. to No. 28, and widths 14 in. and under...40c
All Nos. to No. 28, inclusive and widths over 14 to 24 in. inclusive....45c
Over 30 in. to 30 in., inclusive....46c
Half-cent ₩ ℔ advance on each No. above No. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass at..59c
Sheets 24x48 in., and all sheets cut to particular sizes and lengths....46c
Printers' Rules....50c
Sheets wider than 30 in. and under 40 in....50c
" 40 " and over....52c
Circular sheets, in diam. from 4 in. to 14 inclusive..50c
Circular sheets, in diam. over 14 in. to 20 inclusive..55c
Circular sheets, in diam. over 20 in. to 30 inclusive..56c
Circula sheets, in diam. over 30 in. to 40 inclusive..59c
Circular sheets, in diam. over 40 in....62c

LOW BRASS.

4 cents ₩ ℔ more than High Brass.
Gilding Metals, 7c. ₩ ₩ more than High Brass.
Platers' or Gold Metal { In Bars....52c / Sawed....55c
For Slitting: Metal in Width,
in. to ⅛ in., to No. 30, inclusive, 1c. ₩ ℔ advance.
in. to 1 in., thinner than No. 30, 2c. ₩ ℔ advance.
n. to ⅛ thinner than No. 30, 3c. ₩ ℔ advance.
⅛ in. and less to No. 30, 2c. ₩ ℔ advance.
⅛ in. and less thinner than No. 30, 5c. ₩ ℔ advance.
10 ⅌ discount.

SCRAP.

High Brass Scrap, 21 cents, net.
Low " 23 " "
Gilding, 25 cents, net.
Turnings, Filings and Chips, half the price of Scrap, net.

BRASS AND COPPER WIRE.

(Stub's Wire Gauge.)

	High Brass.	Low Brass.	Gild'g and Cop'r.
Nos. 0 to 20	43	47	53
Nos. 21, 22, 23	44	48	54
Nos. 24 and 25	45	49	55

Brass Wire straightened and cut, 4 cents advance.
10 ⅌ discount

FINE WIRE—NET PRICES.

	High Brass.	Low Brass.	Gil andd'g Cop'r.
No. 26	0·45	0·49	0·55
No. 27	0·48	0·52	0·58
No. 28	0·50	0·54	0·60
No. 29	0·52	0·56	0·62
No. 30	0·54	0·58	0·66
No. 31	0·56	0·60	0·70
No. 32	0·60	0·64	0·75
No. 33	0·64	0·68	0·85
No. 34	0·68	0·72	0·95
No. 35	0·73	0·77	1·07
No. 36	0·82	0·86	1·19
No. 37	1·02	1·02	1·32
No. 38	1·32	1·32	1·62

Ten cents per pound extra for Spooling.

TUBING

(Brown & Sharp's Gauge.)

	₩ ℔
Plain to No. 20, inclusive	$0·56
Nos. 21, 22, 23, 2c. advance on List for each No.	
Nos. 24, 25, 26, 4c. " " " "	
Above No. 26 special rates.	
Plain Tube, 1-4 inch	72
" " 3-16 "	1 57
" " 1-8 "	1 82
All Mandrel-Drawn Tubes 5c. advance on List.	
Fancy Tubing 4c. advance on List above Plain.	
English, Scotch, and Extra Patterns Fancy Tubing to No. 20	65
Tubing sawed or cut 2 to 4 ft. long, 2c. advance on List.	
Add to two cents a half-cent for each additional cutting under two feet.	
10⅌ discount.	
Brass Door Rail, Polished.—32 cents per lb.—10 ⅌ discount.	

BELT AND HOSE COPPER RIVETS AND BURS.

Price per ℔	57	58	60	62	64	66	68	72	76c.
Nos.	7	8	9	10	11	12	13	14	15

Braziers Rivets, 51 cents per pound.
Copper and Brass Rivets and Burs made to particular sizes and pattern.
The discount on the foregoing list will be 10 per cent.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent. 12 inch. to No. 26	0·65	0·80
6 " " "	0·75	0·90
10 " " "	0·90	1·10
15 " " "	1·00	1·25
18 " " "	1·10	1·40
20 " " "	1·20	

German Silver Sheets over 12 inches wide and weighing more than 10 lbs. $2·60 ₩ ℔ tue
Advance two cents for each additional inch in width above 12 inches, and two cents per pound on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner than No. 36 is Platers' at 50 cents per pound additiona..
German Silver Scrap, one-third less than net price of 12 inch Market Metal; German Silver Turnings, Filings and Chips, half the price of Scrap.
*Brown & Sharp's Gauge is about two numbers finer than Stubs' Wire Guage.

COPPER—Duty: Pig, Bar and Ingot, 5; old copper, 4 cents ₩ ℔; Manufactured (including all articles of which copper is a component of chief value), 45 ⅌ ad valorem. A lisubject to a reduction of 10 per cent.

American Ingot	₩ ℔	35½ @ 35c
English	"	30 @ 31c

SHEATHING, BRAZIERS' COPPER, BOLTS, &c.

Braziers Copper, ordinary sizes, over 16 oz., per square foot	45c. ₩ ℔
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot	48c. "
Braziers' Copper, 12 oz. per square foot and lighter	51c. "
Circles less than 84 inch in diameter	48c. "
Circles, 84 inch diameter and over	51c. "
Segment and Pattern Sheets	48c "
Locomotive Fire Box Sheets	45c. "
Sheathing Copper, over 12 oz. per sq. ft	43c. "
" " 12 oz. ₩ sq. ft. & lighter	51c. "
Bolt Copper	45c. "

No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

TINNING.

14x48, by the case	8c. ₩ sheet.
14x48, less than case	10c. "
Boiler Sizes, 7 and 8 inch	12c. "
" " 9 inch	15c. "
Other sizes not larger than 30x60	2½c. ₩ sq. ft.
Larger than 30x60	5c. " "
Copper Bottoms, 48c ₩ ℔.; 5 ⅌ discount.	

O'NEIL'S PATENT PLANISHED COPPER.

14x48.

14 and 16 oz. and heavier..49c. By the case,	48c. ₩ ℔
12 oz. and lighter	52c. " 51c. "

Boiler Sizes.

7 in., 14x32. 8 in., 14x56. 9 in., 14x60.

14 and 16 oz. and heavier..51c. By the case,	50c. ₩ ℔.
(And all sizes not over 30 inches wide).	
30x60.	
14 and 16 oz. and heavier	53c. ₩ ℔.
12 oz	56c. "

LEAD—Duty: Pig, $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2¼ cents per lb. All subject to a reduction of 10 per cent.

Spanish	@ 6¾c gold
German Refined	@ 6¾c gold
English	@ 7¼c gold
Bar	dis 10 ⅌ 9¾c
Pipe	dis 10 ⅌ 10¾c
Tin Lined Pipe	dis 10 ⅌ 16¾c
Sheet	dis 10 ⅌ 10¾c
Shot	dis 10 ⅌ Drop, 11¾c; Buck, 12¾c

STEEL—Duty: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb.; over 11, 3¾ cents per lb, and 10 ⅌ ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.

Tool	17c
Spring	13¾c
Homogeneous	13¾c
Tire	12½ @ 13¾c
Machinery (round and square)	11½ @ 12c
File	12¾
Sheet	14 @ 16c
Saw Plate, mill and mulay	14 @ 16½c
aw Plate, gang and X cut	13 @ 14
circular as to size	18 @ 30c

Chrome Steel.

Tool	16 @ 18c
Machinery	11 @12c
File	12 @ 15c

English Steel—payable in gold, dis. 5 ⅌ cash.

do	Best Cast	₩ ℔	19¾c
do	Extra Cast	"	20¾c
do	Round Machinery, Cast.	"	12¾c
do	Swaged, Cast	"	21¾c
do	Best Double Shear	"	19¾c
do	Blister, 1st quality	"	15¾c
do	do 2d quality	"	13¾c
do	do 3d quality	"	11¾c
German Steel. Best		"	12¾c
do	Eagle	"	11¾c
do	3d quality	"	10¾c
Sheet Cast Steel, 1st quality		"	19¾c
do do	2d quality	"	17¾c

SPELTER—Duty: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.

Silesian, cash	8¾ to 8¾c. gold
American "	8 @ 11c currency

TIN—Duty: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.: Electro-galvanized Plates, 2 cents per lb.; Manufacturers of, not enumerated, 35 per cent. ad val.—all subject to a reduction of 10 per cent. Bars, Banca or Block, and Pigs, free.

Banca	₩ ℔	38¾c. gold
Straits	₩ ℔	@ 34c, gold
English	₩ ℔	@ 32c, gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal	@ 14·50
12x12, "	@ 15·00
14x20, "	@ 15·50
I X 10x14,	@ 16·75
12x12, "	@ 17·25
14x20 "	@ 17·75
For each additional X add	2·25 @ 2·50

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14	$14·00	$13·00	$12·50
14x20	14·75	13·50	
12x12	14·25	13·50	

TERNE PLATE.

	Prime Charcoal.	2d qual. Charcoal.	Coke.
C 14x20	$13·00 @ 13 50	12·75 @ 13·25	11·25 @ 12 75
I X 14x20	15·50		

ZINC—Duty: Pig or Block, $1 50 per 100 lbs. Sheet, 2½ cents per pound. All subject to a reduction of 10 per cent.

Sheet	cask 10 ¾c
"	open 11 @ 11¾c

Paper Stock, Old Metals, &c

(Dealers' Selling Prices.)

Canvas linen	5¾ @ 6
Canvas, cotton, No. 1	7¾ @ 7¾
" " No. 2	4
White linen rags, No. 1	7 @ 7¾
" " No. 2	5 @ 5¾
Colored	3 @ 3½
Mixed woolens	2 @ 3
Soft woolens	9 @ 10
Gunny bagging	2¾ @ 3
Jute Butts	2 @ 2¾
Kentucky bagging	3½ @ 3¾
Book stock	4¾ @ 5
Waste paper and scraps	2½ @ 3
Rope cuttings	1½ @ 3
Kentucky Bale rope	4 @ 4¼
Oakum junk, No. 1	5 @ 5¾
" " No. 2	4
Grass rope	4½ @ 4¾
Tarred Shaking	1¾ @ 2

Old Metal.

Copper	27 @ 28
Yellow metal	18 @ 20
Brass	18 @ 21
Old lead, solid	6¾ @ 7
Tea lead	5½
Wrought Iron	2½
Sheet iron	1 @ 1½
Cast iron	@ 1½
Machinery iron	1¾ @ 2
Zinc	@ 5¾
Pewter, No. 1	26 @ 27
" No. 2	19 @ 12
Spelter	7

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters	₩ ℔ 20
" " Ordinary	6c
" Ivory Drop, fair	15c
" " best	20c
Black Paint, in oil kegs, 8c, asst'd cans, 10½c	
Blue, Prussian, fair to best	50 @ 75c
" " in oil	35 @ 65c
" Chinese, dry	83c
" Ultamarine	25 @ 30c
Brown, Spanish	1¼c
" Van Dyke	4c
Carmine, French	$14 00
Green, Chrome	15 @ 25c
" " in oil	18 @ 25c
" Paris good, 30c, best, 40c	
" " in oil " 30c,	45c
Mineral Paints	1¼ to 4c
Orange Mineral	14½c
Red Lead, American	9½c
" English	10½c
" Venetian (N. C.) dry	5½c
" " in oil asst'd cans, 11c, kegs, 8½c	
" Indian, dry	10c
Rose Pink	13c
Sienna, American, Raw	4c
" Burnt	4½c
" " in oil	16 @ 20c
" Raw "	15 @ 25c
Umber, Burnt	4 @ 8c
" " in oil	16 @ 21c
" Raw	3½ @ 7¼c
" " in oil	16 @ 22c
Vermillion, Chinese	1 40
" English	1 30
" Trieste	1 05
" American, Common	23c
White Lead, American, pure dry	11½c
" " " in oil	12 c
White, Paris, English, prime in bbls. 2½ @ 2¾c	
Yellow Ochre, French 2¾ @ 2¾c	
" " " in oil asst'd cans, 11c, kegs, 8½c	
" " Vermont in casks 1½c	
" Chrome	17 @ 27c
" " in oil	18 @ 28c
Zinc White, American No. 1 dry scarce	10c
" " " 1, in oil	12c
" French (Paris)	11½c
" " in oil	12½c

Oils.

Linseed Raw ₩ gal. casks, 95c, bbls, 96c	
" Boiled " 1·00c, " 1·01	
Whale, Crude	
" Bleached Winter	
Sperm, Crude	
" Winter unbleached	
" Bleached	1 85
Seal, Extra Refined	87½c
Lard, Pure Winter	80c
" Spring	78c
Cotton Seed, Crude	55c
" Southern Yellow	65c
" White	75c
Neatsfoot, Winter	$1 35
Natural Lubricating	45c

Sundries.

Asphaltum	8c
Benzine	₩ gal. 20c
Chalk	1½c
" Block	
Dryer, Patent, Am'n asst'd cans, 11½c., kegs, 9c	
" " English " " 12c., " 11c	
Flocks	
Frostings	50c
Glue, White	33 @ 45c
" Sheet	20c
Glazier's Points, Zinc	9c
Gum, Copal	3bc
" Damar	25c
" Shellac, English	50c
" " " dark	46c
Litharge	10c
Pumice Stone, selected Lumps	5 @ 7c
" " powdered	4c
Putty in bladders	3½c
" in bulk	3c
Rotton Stone, soft, English	5c
Sand Paper, crystal	$3 25
" " flint	50
Spirits Turpentine	59c
Whiting, Spanish	1½c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$10·75	$9·75	$9·00	$8·25
11 x 14 & 12 x 13	11·50	10·25	9·75	8·75
10 x 16 to 14 x 26	12·50	11·50	10·25	9·00
18 x 22	13·25	12·00	10·75	9·50
15 x 26 to 20 x 30	15·75	14·00	13·00	10·25
22 x 30 to 24 x 30	19·75	16·75	13·50	
26 x 28 to 24 x 36	20·25	17·50	14·00	
26 x 36 to 26 x 44	22·75	20·25	15·50	
28 x 44 to 30 x 50	24·00	21·50	16·75	
30 x 52 to 30 x 54	27·25	24·00	18·75	
30 x 56 to 34 x 56	29·50	26·25	22·00	
34 x 58 to 34 x 60	31·50	29·50	25·00	
36 x 60 to 40 x 60	37·00	32·50	29·50	

DOUBLE

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$16·00	$14·50	$13·50	$12·50
11 x 14 & 12 x 13	17·25	15·50	14·75	13·25
10 x 16 to 14 x 26	18·75	17·25	15·50	13·50
18 x 22	20·00	18·00	16·25	14·25
15 x 26 to 20 x 30	24·00	21·00	18·00	15·50
22 x 30 to 24 x 30	30·00	25·25	20·25	
26 x 28 to 24 x 36	31·00	26·50	21·00	
26 x 36 to 26 x 44	34·00	30·50	23·25	
28 x 44 to 30 x 50	36·00	32·25	25·25	
30 x 52 to 30 x 54	41·00	36·00	28·25	
30 x 56 to 34 x 56	45·00	39·50	33·00	
34 x 58 to 34 x 60	48·00	45·00	37·50	
36 x 60 to 40 x 60	55·00	49·00	45·00	

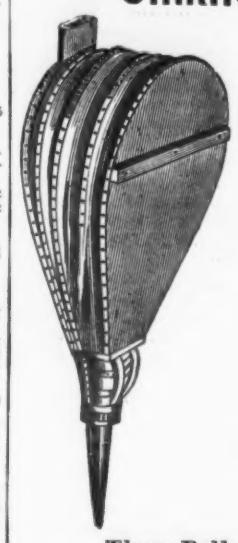
Sizes above—$12 ₩ box extra for every five inches.
Discount to the trade 50 per cent.

GEORGE E. NEWCOMB. JAMES W. NEWCOMB. JOHN H. NEWCOMB.

NEWCOMB BRO'S SONS,

Manufacturers of

Smiths', Moulders' and Hand



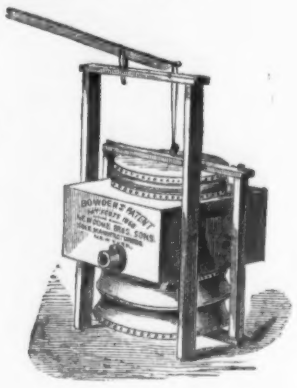
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Bowden's Patent

TRIPLE-ACTION

Forge

Bellows.



These Bellows are superior to all others now in use.

They can be used either in single or double-action, for light or heavy work, as required. They maintain a steady and continuous blast, the air being forced into the chest both at the up and down stroke. The strength of blast obtained is double that of the ordinary bellows of the same dimensions. They work easily. While the blast is double, the power required to work them is no more than that of a common bellows. Being fully rigged and geared, ready for work, and easily moved from place to place, they are very convenient or rail road, mining, and other purposes where portable bellows are required. They economize space, occupying only half the room of an ordinary bellows. These Bellows come to hand at once. A good blast is obtained at the first stroke, and no time or labor is lost, as in the old single-action bellows, in getting up a good blast. They can be made of any size and shape, to suit all requirements. They are the cheapest Bellows in the world. With all the advantages of double-action, they cost no more, power for power, than the common single-action of same quality. For further particulars send for descriptive circular and price list.

586 Water St., near Montgomery, N. Y.

STATE RIGHTS FOR SALE.

Canal Street, East Broadway and South Street Cars cross Montgomery Street.



Improved Stationary Engines.

Always on hand assortment of sizes from 10 to 200 horse power. Second-hand engines taken in exchange when desired.

Climax Turbine Water Wheels.

Assortment of sizes always on hand.

Pulleys, Shafting, Gearing and General Machinery.

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WHITEHILL, SMITH & CO., Newburgh, N. Y.

THE CORRUGATED STOVE PIPE ELBOW,

Strong,



Durable.

No Soot,

Cheap.

Better Draft.

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SELLEW ELBOW CO.,

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MANUFACTURERS OF

Patent Dovetailed Slot Gimlet-Pointed

IRON AND BRASS SCREWS.

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P. O. Box 3288. Orders filled promptly.

D. H. WHITTEMORE'S

MEAT CUTTER

For Family Use.

Cuts raw or cooked Meat, Hash, Vegetables, &c., in one-tenth the time it takes by hand. It works extremely easy and a child can operate it. Sells at all seasons of the year. Price, $3·00; wholesale price, $27·00 per doz. Sample orders filled at the wholesale price.



"Bay State" & "Skeleton"

Apple Paring, Coring, and Slicing Machines.

"Union" Apple Parer.

BAY STATE Peach Parer. Peach Stoner and Nut Cracker.

Liberal discount on purchases of Apple Parer, &c., made before the regular time of selling. Correspondence invited.

D. H. WHITTEMORE, Worcester, Mass.

HILL'S ARCHIMEDEAN" LAWN MOWER.

THE CHAMPION OF THE WORLD.

he first and only Balanced Lawn Mower made and operated by an Adjustable Handle.

The leading Machine both in the United States and Europe, having taken the Gold Medal at the great Fair in Hamburg, Germany, and the Premiums at every test trial in the U. S. Also the Silver Medal at the Cincinnati Exposition of 1872.



So well known is this favorite Lawn Mower that it needs no further recommendation. It has a greater reputation, and larger sale, both in the United States and Europe, than any Lawn Mower made, and the first and only one constructed upon those principles.

What we claim for it over others is ease of operating, *durability*, and beauty and evenness of its work.

We wish more particularly to call attention to the addition we have made to our list, of 2 sizes of Horse Mowers, and one beautiful little Croquet Mower for small Lawns and Cemetery Lots, which is the most complete thing of its kind made, and is easily operated by a Miss of ten years. Our list is as follows:



10 inch Croquet Mower, for Miss, $20·00. 14 inch, for Man - - - - - $25·00.
12 inch, for Boy - - - - 22·00. 28 inch, for Pony - - - - - 100·00.
32 inch, for one Horse - - - $125·00.

Send for circulars. Manufactured by the

Hills Archimedean Lawn Mower Co.,

Colts Armory, Hartford, Conn.

SEMPLE, BIRGE & CO., General Agents, West of the Mississippi, St. Louis, Mo.

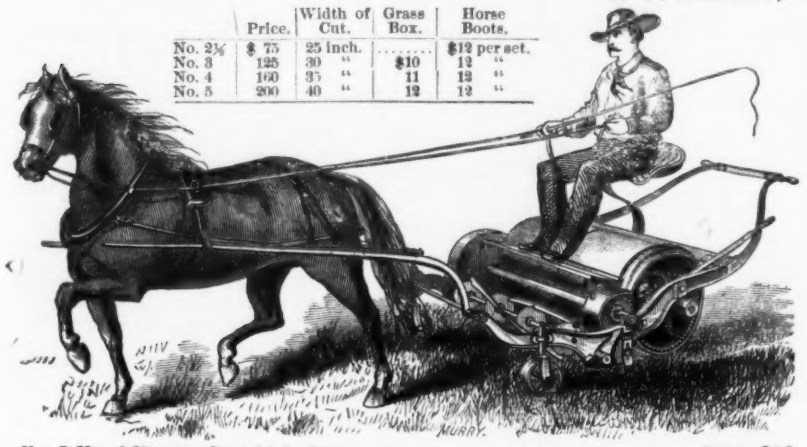
The Improved Excelsior Lawn Mowers,

FOR HAND OR HORSE POWER, MANUFACTURED BY

CHADBORN & COLDWELL MANUFACTURING CO.

P. O. Box 479, NEWBURGH, N. Y.

	Price.	Width of Cut.	Grass Box.	Horse Boots.
No. 2½	$ 75	25 inch.	.....	$12 per set.
No. 3	125	30 "	$10	12 "
No. 4	160	35 "	11	12 "
No. 5	200	40 "	12	12 "



For Sale by all the leading Hardware, Agricultural Implement and Seed Stores, in this and foreign countries.

Ask for the Excelsior and get the Best.



No. 0 Hand Mower—Cuts 11 inches.....Price, $16.
No. 1 " — " 14 " ..... " $25.
No. 2 " — " 18 " ..... " $30.

The No. 1 for general use, and warranted. The No. 2 for large lawns—when smooth.

The Excelsior is simple and durable. The *gearing* securely incased and will not clog. Has a *full roller*, without which no machine is perfect. A *ball ratchet*—"noiseless"—needs no oiling. Adjustable *wrought iron handle*. *Hangers* secured by bolts. The front rollers to these are adjustable, to vary the hight of cut. *Open balance wiper*—with *steel knives*—the only practicable means of securing strength and ease of draught. *Patent iron handle*, with attachment on each side of the machine—avoids the serious annoyance of a single wooden handle. The **Excelsior Lawn Mower** having been before the public for four years, and subjected to the most severe tests, the manufacturers feel warranted in asserting that for SUPERIORITY in *simplicity of construction* and *durability* it has no equal. It is *important* in either *Horse* or *Hand Lawn Mowers*, that their design should combine the *greatest strength* with least amount of *metal*; we therefore use only the very *best material*, together with *good workmanship*, enabling us to produce *Lawn Mowers* light *in weight*, of *easy draught*, and at a price within the reach of all.

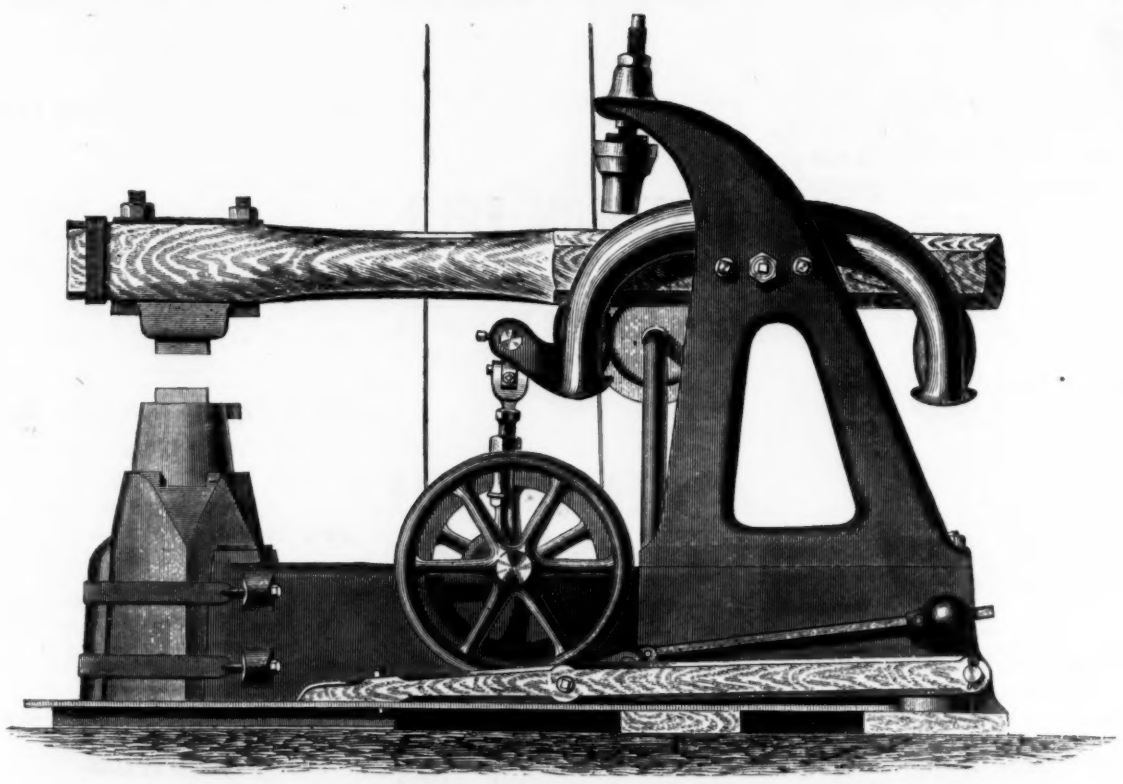
The Excelsior has received the most favorable commendation from all, and the advantages claimed for it over other machines are fully appreciated wherever it is known. To this we add numerous testimonials, but the fact that our sales have greatly increased year by year, is the most convincing proof of its adaptation to the wants of the public.

GRAND SILVER MEDALS AWARDED THE EXCELSIORS AT THE

New England Fair, held at Lowell, Mass., Sept., 1871 and 1872; New Jersey State Fair, held at Waverly, N. J., Sept., 1871 and 1872; the first premium at the New York State Fair, 1871; Western New York Fair, 1871; Ohio State Fair, 1871 and 1872; Northern Ohio Fair, 1871 and 1872; Michigan State Fair, 1871 and 1872; Indiana State Fair, 1871; Wisconsin State Fair, 1871 and 1872; Tennessee State Fair, 1871; Virginia State Fair, 1871; South Carolina State Fair, 1871.

For description of Mowers, and particulars, send for catalogue. Agents wanted. A liberal discount to the trade.

BRADLEY'S CUSHIONED HAMMER.



This Hammer is a great improvement over the old style of helve hammers. It is all made of Iron and Steel except the helve and cushions. It is portable, takes up but little room, and makes no noise except the stroke of the hammer. It takes less power to drive it, and it turns out more and better work. The helve is nicely balanced upon two adjustable hardened steel centers, and there is no bind or friction connected with its action. It will endure more hardships at less expense for repairs, and, consequently, outlasts any other. Its capacity is greatly increased, but not at the expense of its size, convenience or durability It strikes a more accurate, forcible and elastic blow than any other hammer. It is being used and is peculiarly adapted for the exceeding difficult work of swedging cotton spindles; no other hammer has been able to do this work as perfectly and economically. It is the favorite of every hammersman; it promptly obeys his every touch, and he soon regards it as a thing of life. *We warrant them as recommended*, and refer you to the following parties now using them:

W. H. Haskell & Co., Pawtucket, R. I.
Cole Brothers, Pawtucket, R. I.
American File Co., Pawtucket, R. I.
Fales, Jenks & Son, Pawtucket, R. I.
Providence Tool Co., Providence, R. I.
Nicholson File Co., Providence, R. I.
Woonsocket Iron Foundry, Woonsocket, R. I.
For particulars address

John Berkenhead, Mansfield, Mass.
Steele & Condict, Jersey City, N.
Silsby Mfg. Co., Seneca Falls, N. Y
Cowing & Co., Seneca Falls, N. Y.
Rumsey & Co., Seneca Falls, N. Y.
Clapp, Fitch & Co., Auburn, N. Y.
Sweet, Barnes & Co., Syracuse, N. Y.

Warder, Mitchell & Co., Springfield, O.
Robert Doyle, Watseca, Ill.
Furst & Bradley Mfg. Co., Chicago, Ill.
Chicago Plow Co., Chicago, Ill.
Mark H. Richards, Pottstown, Pa.
Peters Bros. Mfg. Co., Marshall, Mich.
Studebaker Bros. Mfg. Co., South Bend, Ind

BRADLEY MFG. CO., Syracuse, N. Y.

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FOR SAMPLE CARDS.

Our Paint is made of the very best material known to painters, viz: White Lead, Zinc and Linseed Oil, chemically combined, and is superior to any paint known to the trade. The advantages being that
It is ready for use.
It is applied with less labor.
It shows a beautiful enamel surface.
It does not chalk or peel off.
It does not run from nail holes or corners.
It is fire proof and water proof.
It covers old work as well as new.
It is the best paint for iron buildings.
It is equal to any for covering brick.
It is a perfect wood preservative.
Rain, before dry, does not wash it.
It is durable, retaining its enamel and freshness.
☞ Sold by the Gallon only, in Cans or Barrels.

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Cornell Lead Co.,

cor. Delaware and Virginia Streets. BUFFALO, N. Y.



TRADE MARK.
Manufacturers
WHITE LEAD Dry and in Oil,
Lead Pipe, Sheet and Bar Lead.
S. G. CORNELL, Prest. A. P. THOMPSON, Vice-Prest.
S. DOUGLAS CORNELL, Secy.

White Lead, &c.



Union White Lead Mfg. Company,
26 Burling Slip, New York.,
B. W. How, Secretary. James How, President.
MANUFACTURERS OF
White Lead, Red Lead, Litharge, Orange Mineral.

Brooklyn White Lead Co.



TRADE MARK.
White Lead, Red Lead and Litharge.
89 Maiden Lane, NEW YORK.
FISHER HOWE. Treas.

JOHN JEWETT & SONS

Manufacturers of the well known Brand of
WHITE LEAD.



TRADE MARK.
Also Manufacturers of
LINSEED OIL
AND FLOOR OIL CLOTHS,
182 Front Street, NEW YORK.



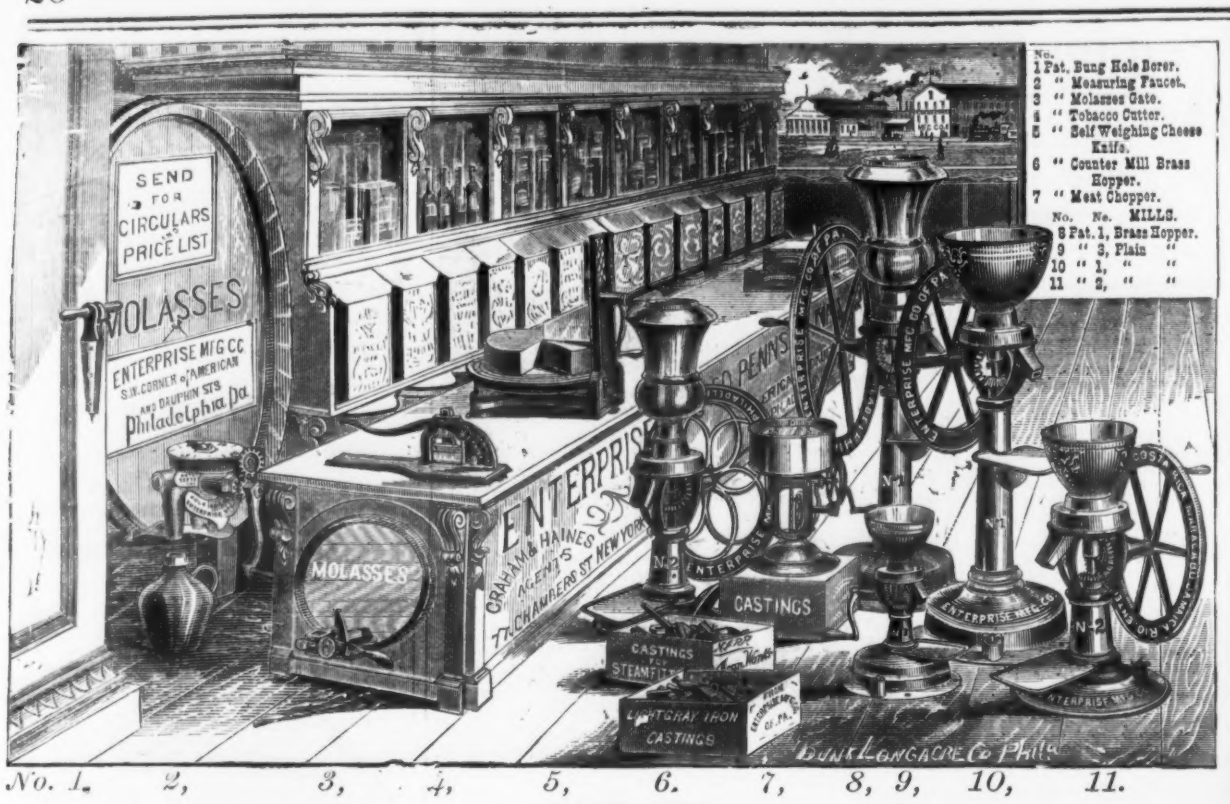
TRADE MARK.
The Atlantic White Lead and Linseed Oil Company,
MANUFACTURERS OF
White Lead (Atlantic), Red Lead
Litharge & Linseed Oil.
ROBERT COLGATE & CO.,
287 Pearl Street, New York

John T. Lewis & Bros.,

No. 231 South Front St.,
PHILADELPHIA.



TRADE MARK.
MANUFACTURERS OF
PURE WHITE LEAD, RED LEAD,
Litharge, Orange Mineral,
Linseed Oil
AND PAINTERS' COLORS.



FOR PRICES ADDRESS

ENTERPRISE MFG. CO., of Pa., HARDWARE MANUFACTURERS, W. Cor. of American and Dauphin Sts., PHILADELPHIA. or **GRAHAM & HAINES, Agents,** 88 Chambers St., New York.

SANDUSKY TOOL CO.,

MANUFACTURERS OF

Planes, Plane Irons, Carpenters', Cabinet Makers' and Coopers' Tools,



Bench, Hand and Tail Screws, and Chisel, File and Auger Handles.

SANDUSKY TOOL CO., Sandusky, Ohio, or GRAHAM & HAINES, 88 Chambers Street, N. Y.

Headquarters for

Henry Disston & Sons' Saws,

Hand, Mill, Circular and Cross Cut.

ALSO,

Plumbs and Levels, Try Squares, Gauges, Trowels and Barker's Reversible Butt.

A full assortment constantly on hand. Address orders to

GRAHAM & HAINES, 88 Chambers Street, N. Y.

Samuel Loring's Tacks and Rivets.

Warehouse, 88 Chambers Street, New York.

A full assortment of

TACKS (all kinds), BRADS, TRUNK, CLOUT, HUNGARIAN and FINISHING NAILS.

Also, BLACK and TINNED RIVETS always on hand for immediate delivery, if required.

GRAHAM & HAINES, 88 Chambers Street, New York, Agents.

Philadelphia Tool Co.,



MANUFACTURERS OF

Davis' Patent Duplex Wrench,

A tool well made of **Best Materials**, combining all the good qualities of a regular Nu Wrench of equal size with that of at least six pairs of Pipe Tongs. For circulars and price lists, address,

PHILADELPHIA TOOL Co., Office & Works, S. W. cor. 13th & Buttonwood Streets, Phila., Or *GRAHAM & HAINES, Agents, 88 Chambers Street N. Y.*

SMITH, BURNS & CO.,

Manufacturers of

Galvanized and Japanned Sheet Iron Goods and Tin Ware.



Coal Hods. Patent Stamped Corrugated Riveted Bottom.
Fry Pans. "Excelsior" Polished.
Excelsior Broiler. Best and Cheapest in the market.
Combined Chamber and Commode Pail,
Ash Cans, Galvanized and Japanned,
Galvanized Water Pails, Well Buckets,
Chamber Pails, Tea Kettles, &c., &c.
Toilet Sets. Fancy and Grained.
Chamber Pails, Slop Pails, Foot Tubs, Baths, Water Carriers, Coolers, &c., &c.
Stamped and Piece Dish Pans and Plain Tin Ware.

Send for Illustrated Catalogue.

Warehouse, 45 Cliff Street, between Beekman and Fulton Streets, NEW YORK.

HOWE'S

Patent Family Glue Pot.



The Pot and Cup are made of Cast Iron, like the ordinary Glue Pot, with a cover and serviceable brush. It is altogether the best of the cheap Glue Pots in the market, being in everything except size exactly the same as those used by mechanics. From the large sales in the past, we are convinced that it supplies a necessity long felt where Glue is required—in the family, store, bank and office. The Glue is prepared in a manner to prevent all decay or mould. It is always ready for use, and will save many dollars. They are packed half a dozen in a box, and twelve boxes in a case. Price, per doz. $5, with a liberal discount to the trade.

Orders should be addressed to the manufacturers

The J. & E. Stevens Co., Cromwell, Conn.,

Or to the sole agents

Graham & Haines, 88 Chambers St., N. Y.

CAUTION.

BUY ONLY THE

GENUINE FAIRBANKS SCALES,

Manufactured by

E. & T. FAIRBANKS & CO.



Standard Scales.

Stock Scales, Coal Scales, Hay Scales, Dairy Scales, Counter Scales, &c.

Scales repaired Promptly and Reasonably.

For sale, also, Troemner's Coffee and Drug Mills, Composition Bells, all sizes Letter Presses, &c., &c.

THE MOST PERFECT

ALARM CASH DRAWER.

MILES ALARM TILL CO.'S

EVERY MERCHANT SHOULD Use them.



EVERY DRAWER Warranted.

SOLD AT

FAIRBANKS' SCALE WAREHOUSES,

FAIRBANKS & CO.,

311 Broadway, N. Y.; 93 Main St., Buffalo, N. Y.
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Fairbanks, Brown & Co.,
118 Milk Street, Boston.

For sale by leading Hardware Dealers.

WM. P. KELLOGG & CO.,

Troy, N. Y.,

Best Made and Best Finishe

Curry Combs, Boring Machines, Portable Forges,

ALSO,

COOLEY'S PATENT WHIP RACK.

GEORGE WHEELER

118 CHAMBERS ST. NEW YORK AGENT.

Pipe, Fittings, &c.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS

For STEAM, WATER and GAS.

Wrought Iron Pipe & Fittings, Plain and Galvanized

PLUMBERS' MATERIALS.

Illustrated Catalogue sent by express to the Trade on application.

Factory, Paterson, N. J. 56 John Street, N. Y.

PANCOAST & MAULE

227 Pear St.

PHILADELPHIA.

WROUGHT IRON PIPE

FITTINGS, BRASS & IRON VALVES & COCKS

TOOLS & STEAM FITTERS SUPPLIES &c.

PIPE CUT & FITTED TO PLANS FOR MILLS &c.

SUCCEED MORRIS TASKER & Co. AS

CONTRACTORS

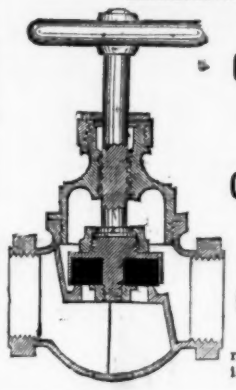
FOR HIGH & LOW PRESSURE STEAM HEATING APPARATUS FOR ALL CLASSES OF BUILDINGS.

Send for Illustrate Catalogue.

Nelson, Finkel & Co.,

439 East 10th St., New York,

Manufacturers of



Jenkins' Patent **Compression Valves** AND **Gauge Cocks** Also, **Nelson's Patent LUBRICATOR.**

Warranted the most reliable and durable in the country.

CAST IRON PIPES

FOR WATER AND GAS.

Branches Retorts, &c.

Warren Foundry & Machine Co.,

PHILLIPSBURG, NEW JERSEY.



EATON & COLE.

Manufacturers of

Wrought Iron Pipe Fittings,

BRASS VALVES, COCKS, TOOLS, &C.,

Sole Agency for the East.

68 John Street, NEW YORK.

GRAFF TUBE WORKS.

WILLIAM GRAFF & CO.,

Manufacturers of Plain and Galvanized

Wrought Iron Pipe

For

Gas, Steam, Water, Oil, &c.,

No. 140 First Ave., PITTSBURGH, PA.

Pipe of any Size, Length or Thickness furnished to order.

Chas. Gregg Stearns, Pres. A. F. Weaver, Treas. Geo. Watson, Sec.

THE CHARLES GREGG MANUFACTURING CO.

FITTINGS FOR

Steam, Gas and Water,

PLAIN AND GALVANIZED

WROUGHT IRON PIPE,

Nos. 62 & 64 Gold Street, NEW YORK.

Business Established, 1836. Incorporated, 1872

Industrial Tube Works.

ISAAC J. GRIFFITHS & BROS.

Manufacturers of

Wrought Iron & Galvanized Tubes

For Gas, Steam and Water.

Brass and Iron Valves, Cocks,

Cast and Malleable Iron Fittings.

Tubes cut and fitted to plans and specifications.

1529, 1531, 1533 & 1535 South 7th St., PHILADELPHIA.

WM. S. CARR & CO.

Sole Manufacturers of

Carr's Patent Plumbers' Goods,

Pumps, Water Closets, Fountains, Vases, &c.

OFFICE AND WAREROOMS,

106, 108 & 110 Centre Street,

Factory, Mott Haven, New York.

W. ROSE & BROTHERS

WEST PHILADELPHIA,

Manufacturers of

Plasterers' and Brick Trowels,

Hammers and Chisels.

ALSO,

Saddlers' Round Knives, etc.,

N. E. cor. 36th & Filbert Sts.

☞ Please send for Price List.

ENGRAVING ON WOOD

D. H. TUTTLE 5 BEEKMAN ST. N.Y.

Mechanical work a Specialty

PHILADELPHIA.

(Corrected weekly by Loyd, Supplee & Walton.)

Terms, 60 days. For 60 or 90 days' interest added at 10 per cent. per annum.

ANVILS.

Solid Cast Steel ₱ lb 12½c
Peter Wright's ₱ lb, gold, 12½c
Wilkinson's 11½c
Eagle, ₱ lb 11 cents, currency dis 15%

APPLE PARERS.

Reading, Turn Table per doz $8 50
Union per doz 8 00

AXES.

Mann's Light Per doz. $13 00@14 00
Hunt's, Light $14 00@14 50
Red Indian, all sizes $13 00@13 50
Red Chieftian " $13 50@14 00
Crown Prince $14 00@14 50

AUGERS AND AUGER BITS.

Pierce's Patent Twist Bits dis 20@20&5%
Bates' & Ives' Bits dis 20&10%
Douglass' Bits dis 30%
Cook's Bits dis 25&10%
Bonney's Pat. Hollow Augers dis 25%
Russell Jennings' Bits dis 10%
Bates' & Ives' Nut Augers dis 20&10%
Douglas Nut Augers dis 30%
Watrous' Ship Augers dis 10%

BALANCES.

Landers, Frary & Clark's dis 10@15%
Chatillon's dis 10@15%
Morton's dis 10@15%
Common Spring, with Hook ₱ doz $1 38@2 00

BELLS.

Bevin Bros. Mfg. Co. Hand Bells dis 50%
Extra Light Hand Bells dis 50&10%
Other makers, light dis 50&10%
Connell's Door Bells old list net
Western and Kentucky dis 50%

BORING MACHINES.

Bates' Mfg. Co., complete with augers dis 10@12½%
Douglas' " " " dis 10@15%
Common No. Augers $4 25@4 00
Angular, Extra, No. Auger 5 50@5 00

BOLTS.

Eastern Carriage Bolts dis 60&20%
Western " dis 60&20%
Philadelphia Carriage Bolts dis 40%
Wrought Shutter Bolts dis 35&10%
Cast " dis 35%

BRACES.

Barber's dis 30&10@40%
Bartholomew's dis 10@15%
Spoffard dis 37½%

BUTTS.

Cast Fast Joint, Narrow dis 15%
" " Broad dis 30%
Cast Loose Joint dis 40%
" Acorn Drilled dis 25&10%
Wrought Loose Pin dis 20%
" Table & Back Flaps dis 5%
" Narrow dis 10%
" Loose Joint dis 25%
Parker's Blind Butts dis 30%
Shepard's " " dis 30%
Clark's " " dis 30%
Lull & Porter's " " dis 25@25&5%
Palmer's " " dis 30@30&5%
Garretsons' " " dis 40%

CHAINS

German Halter, new gold list @ dis 10%
" Coil new gold list @ dis 10%
Galvanized Pump ₱ lb 15c
English Coil, less than cask add ½c. ₱ lb
Common Chain, ½c. ₱ lb less.
Best Proof Coil Chain—
₱ lb .... 14¼ 11¼ 10¼ 10 9¾ 9½ 9s gold
3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ in.

By the cask, 560 lbs., discount ½c per lb. Common Chain, ½c per lb. less than proof.

CHISELS.

Socket Framing dis 60@60&5%
Socket Firmer dis 60@60&5%
Tang Firmer dis 40@40&5%
Beaty's Framing and Firmer dis 10@10&5%

CASTERS.

Porcelain Wheel dis 20@20&5%
Iron dis 20@20&5%
Brass dis 20@20&5%

CLOTHES WRINGERS.

Reliance advanced March 7 per doz $72 00
Crown " " 7 " " 72 00
Monitor " " 7 " " 72 00
Universal " " 7 " " 72 00
Novelty " " 7 " " 72 00

In 5 dozen lots assorted, at one time $70 00 per doz.

COFFEE MILLS.

Common Box and Side advanced April 1872 dis 15%
Patent " " " " dis 10%

CUTLERY.

American Pocket (best) dis 20@25%
Landers, Frary & Clark, J. Russell & Co., and Lamson & Goodnow Mfg. Co. Manufacturers' net prices

DRAWING KNIVES.

Hart Mfg. Co.'s dis 60@60&5%
Concave Adjustable Handle dis 10%
Beatly dis 10%

FILES.

Nicholson Mill Files new list, $5 00 to £ cur
" Bastard " " 5 00 to £ cur
" Taper " " 5 00 to £ cur
Butcher's Mill 5 75 to £ gold
" Bastard 5 50 to £ gold
" Taper 5 50 to £ gold

FLUTING MACHINES.

Royal, No. 1, 4¼ inch Rollers list $6 00
" No. 2, 6 inch Rollers list 7 00

HAMMERS AND HATCHETS.

Yerkes & Plumb's dis 5@10%
Hammond & Son's dis 5@10%

HINGES.

Strap and T dis 15%
Bonney's No. 1 Gate dis 25%
" No. 2 & 3 dis 35%

HORSE NAILS.

	Nos. 6	7	8	9	10
Ausable Horse Nails	27	25	24	23	22
Globe " "	29	26	25	24	23
Brundage " "	26	24	23	22	21
	Nos. 5	6	7	8	9	10
Putnam " "	32	28	26	25	24	23

On Ausable Globe & Brundage 1000 lb lots dis 5%

KNOBS.

Door (regular manufacture) dis 40%
Rim and Mortise dis 40%
Porcelain and Mineral dis 40%

LOCKS AND LATCHES.

Rim and Mortise dis 25%
Till and Cupboard dis 20@25%
American Padlocks dis 40%
Trunk Locks dis 5@10%
Thumb and Roggens Latches net @ dis 10%

MATTOCKS.

Long and Short Cutter dis 10%
Western Pattern dis 10%
Pennsylvania Pattern dis 10%

MOLASSES GATES.

Enterprise Mfg. Co.'s Measuring Faucets dis 20%
Stebbins' Gates dis 50@50&10%
Lincoln's " dis 40@40&10%
Landers, Frary & Clark's, Petroleum dis 10@10&10%
Taylor's Petroleum Faucets dis 20@30&10%

RAKES.

Cast Steel Garden dis 30%
Malleable " dis 33⅓%
Wood Head Iron Teeth dis 30@40%

RULES.

Rules dis 60%

SQUARES.

Steel Squares, new list dis 50%
Iron " " " dis 50%

SAWS.

Disston's Cross Cut dis 12½%
Disston's Hand dis 7½%
Wm. McNiece's Hand, Cross-Cut and Circular, new list dis 15%
Boynton's Lightning, new list dis 30%

SHOVELS AND SPADES.

Rowland's Plain Back, list Feb. 1873 dis 20%
" Back Strap " " dis 20%
Oliver Ames & Sons, advanced April 8 net list
Brady Shovel Co dis 7½%

SAD IRONS.

Reading (planed face) per lb. 5½c.
Coquanock (polished face) 5c.

STOVE POLISH.

Gem per gross $5 00
Onyx " $5 00

SCYTHES.

Golden Clipper ₱ doz $11 50
Clipper No. 10 " 10 50
Common Scythes ₱ doz $7 00@10 00

SCREWS.

Iron (list Mar 6) dis 50%
Brass (Brass Screw list) dis 40%

SPOONS.

Plated Spoons, Rogers Bros.' dis 25@25&5%
Britannia, Parker's and Boardman's dis 25@25&10%
German Silver list net
" " Light dis 5%

TRY SQUARES.

Stanley Rule & Level Co dis 40%
Disston's dis 12½%

TACKS, CLOUT AND FINISHING NAILS.

Half Weight Tacks dis 70%
" " by case dis 70&7½%
Clout and Finishing Nails 7½%
" " by the case dis 7½%

TRAPS.

Genuine Oneida—Newhouse list dis 20%
Imitation " " dis 20&10%

WRENCHES.

Coes Genuine dis 30%
Coes Imitation Wrought Bar dis 40%
" " Malleable Bar dis 50%
" Pattern Malleable Bar dis 50%
Tafts Wrought Bar 60%
Tafts Malleable Bar 65%

WIRE.

No. 0 to 18 dis 20@22½%
No. 19 to 26 dis 27½@30%
No. 27 to 36 dis 33⅓@35%
Coppered 0 to 12 dis 15@20%
Tinned Broom Wire dis 15%
Bradlee & Co., Office Nos. 19 & 21 South Fourth st., Philadelphia. Price list of Proved and Warranted Chains. Discount ½c. per lb.

SHORT LINK CHAIN.

Size. Inches.	Average Wt. Per Fathom. Lbs.	Proof. Tons.	Price Cts. Per Lb.
¼	15	4	10½
9-16	19	5	10
5-8	25	6	9½
11-16	30	8	9⅓
¾	35	10	8¾
13-16	40	12	8⅝
⅞	47	14	8⅝
15-16	54	16	8⅜
1	60	18	8⅛
1 1-16	67	20	8⅛
1¼	74	22	8
1 3-16	82	26	7⅞
1¼	90	28	7¾

All larger sizes same price as 1¼ inch.
Stud Chain 2½c. less than same size close link.

PITTSBURGH.

From the Pittsburgh Commercial.

FLAT BAR.

1¼ to 4 by ¼ to 1 inch 4·6c
4¼ to 6 by ⅜ to 1 inch 4·8c
1¾ to 6 by 1⅛ to 1¼ inch 5·0c
1¾ and 1¾ by ¾ to ¾ inch 4·8c
1 and 1¼ by ⅜ to ¾ inch 4·9c
⅛, ¾ and ⅞ by ⅜ to ½ 5·0c

HORSE SHOE.

All sizes 6·1c
Nail rods 8 5c

HEAVY BANDS

3½ to 6 by ¼ and 5-16 inch 5·2c
1½ to 3¼ by ¼ and 5-16 inch 5·3c
⅞ to 1⅛ by ¼ and 5-16 inch 5·6c
⅜ to ¾ by ¼ and 5-16 inch 5·8c

LIGHT BANDS.

3 to 6 by 3-16 to No. 12 5·6c
1½ to 2¾ by 3-16 to No. 12 5·8c
1 to 1¾ by 3-16 to No. 12 6 2c
⅝ to ⅞ by 3-16 to No. 12 6·8c

HOOPS

2¾ to 3 inch 5·9c
3¼ to 4¾ inch 6·1c
1¾ to 2 inch 6·1c
1⅜ to 1 11-16 inch 6·4c
1⅛ and 1¼ inch 6·7c
1 inch 7·1c
⅞ inch 7·6c
¾ inch 8·1c
⅝ inch 8·6c
½ inch 9·1c

ROUND AND SQUARE.

1 to 1⅞ inch 4·6c
2 to 2¾ inch 4·9c
3 to 3¾ inch 5·1c
3¾ to 4 inch 5·6c
⅞ to 9-16 inch 5·0c
⅝ to 7-16 inch 5·3c
⅜ inch 5·4c
5-16 inch 5·8c
¼ inch 6·2c
3-16 inch 8·2c

OVAL IRON.

⅞ to 1¼ inch 5·2c
⅝ to ¾ inch 5·4c
½ inch 5·6c
⅜ inch 6·2c

HALF OVAL AND HALF ROUND.

⅞ to 1¼ inch 5·5c
⅝ to ¾ inch 6·0c
½ inch 6·7c
⅜ inch 8·2c

Sheet Iron,	Boiled.	Chare'l.	Juniata.
10 to 14	6·2	7·7	9·2
" 15 to 20	6·4	7·9	9·4
" 21 to 24	6·6	8·1	9·6
" 25 to 26	6·8	8·3	9·8
" 27	7·0	8·5	10·0

All sheets over 28 in. wide, ¼c. ₱ lb extra.

TANK IRON.

3-16, ¼ and ⅝ inches thick 6·0
Boiler Plate Iron 7·9
Heads not flanging 7·1
Heads flanging 8·9
Plow Slabs 6·8
Plow Wings 7·3

RAILROAD IRON—COUNTERSUNK AND PUNCHED.

1¼ by ⅝, 7-16 and ½ inch 5·6
1¼ by ¼ and 5-16 inch 6·1
1¼, 1¾ and 2 by ¼ and ⅝ inch 5·1
1¼ by ⅜ inch 5·3

EXTRAS FOR CUTTING TO LENGTH.

Flat bars and rounds and squares 1c
Flat bars for tire 1c
Heavy bands 3c
Light bands and wagon box iron 4c
Hoops 5cc

TERMS.

Note or acceptance at sixty days, with currant rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within fifteen days of date of invoice. Payment to be made in New Bork exchange, United States Treasury notes, or their equivalent. No discount on bills of less than $50.

Heavy Hardware.

The following are the card rates of Lewis, Oliver & Phillips:

Iron, standard list, assorted sizes, for large orders, 4·6c, card rate, 2 % off net.
Iron wedges 6¼c ₱ lb net
Norway Nail rods 9½c ₱ lb net
Fence Pickets—
⅜ round, bent to shape .35c ₱ ft. fence, less 5 %
Discount off Standard List.
Carriage and tire bolts, 60 % & 10 %
Plow blots 20 % off net
Stove bolts list net
Machine and square head bolts new list 20 % off net
Coach and lag screws, new list 20 % off net
Bolt Ends, new list 20 % off net
Square and hexagon nuts and washers, new list 4c ₱ lb off net
Washers new list, 4c ₱ lb off
1c. ₱ lb extra for less than 1 keg of each size.
Harrow teeth, in lots of 1 ton or more, 1 in. diam 5¼c; ¼ & ⅞ in. diam. 5½c; ⅝ in. diam. 5¾c ₱ lb.
Patent Headed Harrow Teeth, packed in casks ¼c extra ₱ lb net.
Skein bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 9c; 9-16 in. diam. 10c; ½ in. diam. 11c. 1c. ₱ lb extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinge, ¼ to 1 in. diam. 10¼c; ⅝ in. diam. 11¼c; ¾ in. diam. 13¼c ₱ lb, net.
Screw and Strap Hinges, in lots of 50 pairs or more, 14 to 36 in. long, 7¼c; 8, 10 and 12 in. long, 9c ₱ lb net.
Strap and T Hinges 15 % net
6 months purchases over $1000, 5 % dis. allowed.
Screw hitching rings $7 ₱ 100 net
Duck nest tuyere irons $16 50 ₱ doz. net
Cast iron washers 5c ₱ lb net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 feet long ₱ lb 5¾c
1 to 2 in. diam. from 4 to 8 feet long 6¼c
1 to 2 in. diam., from 1½ to 4 feet long 6¼c
⅝, ¾ and ⅞ in diam., over 4 feet long 7c
⅝, ¾ & ⅞ in diam., from 1½ to 4 feet long 7½c

WAGON HARDWARE.

Wagon Box Strap Bolts—
16 in. long by 7-16 at screw end, ₱ set of 8 bolts...55c
12 " ⅜ " ₱ " 8 " ...70c
12 " ½ " ₱ " 8 " $1 00
14 " ½ " ₱ " 8 " 1 10
16 " ½ " ₱ " 8 " 1 20
5 cts. ₱ set for each additional inch over 14 inch, by ½. All lengths made.
Wagon Box Rods, narrow track each 18c
Wagon Box Rods, wide track, each 20c
Single Tree Irons, per set of four pieces 38c
Wt. Iron Bolster Plates, 2¼ in. wide, per set:
" " 3 " " 65c
" " 3¼ " " 70c
" " 3½ " " 75c
Wagon Brake Ratchets 16½c each
" " finished with guard 45c each
Wrought rub irons 11c each
Wrought Hammer Straps, heavy pattern.. 16c each
" " light pattern.. 13½c each
Stay Chain Hooks 9c each
" " " heavy each 12c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 50 set...20 % dis.
Wagon Box Staples, 1½ to 2½ in. to clinch per 1000, $14 00 net
Wagon Box Staples, Box Iron, to rivet on, per 1000, $11 00 net
Neck Yoke Eyes, each 5¾c net
Neck Yoke Eyes, with ⅜ inch rings 8¾c net
King Bolts, ⅞, 1, 1⅛, and 1¼ in. diam. ₱ lb. 5¾c
Wagon Rivets, ex. large, oval and steeple head, ¾ in. diam., all lengths, ₱ lb 11c
Wagon Rivet, 3-16 inch diam., all lengths 13c
Wagon Rivets & nails in 5 lb paper boxes, ₱ lb ex 1c
Wagon and Hinge Nails, ₱ lb net 17c
Coupling plates
Double Tree Plates
Tongue Plates } 9½c ₱ lb net
Neck Yoke Plates ₱ lb 12c
Tongue Cap Iron, 1¼, 2 and 2¼ in. wide, same price ₱ lb as Band Iron.
Wagon Chains, Stay Lock and Tongue 5-16 in., 12½c; ¼ in., 14c.

Nails, Brads, Spikes, etc,

CUT NAIL LIST.

10d to 60d nails, fence, and brads $5 56
8d and 9d nails, fence and brads 5 73
6d and 7d nails, fence and brads 6 00
4d and 5d nails, fence and brads 6 25
3d nails, fence and brads 7 00
2d nails, fence and brads 8 25

TOBACCO.

FINE BLUED.		BARREL.	
3d	$8 25	1¼ inch	$6 25
2d	9 25	1⅛ inch	6 50
LINING.		1¼ inch	7 00
7-8	10 00	1⅜ inch	7 25
CASING.		1 inch	8 00
10d to 50d	6 25	⅞ inch	8 50
8d	6 50	FINISHING.	
6d	6 75	10d to 50d	6 75
4d	7 00	8d	7 00
		6d	7 25
		4d	7 50

Cut spikes, all sizes 5 75
Cut boat spikes 6 25
Clinch nails, all sizes 6 25

TERMS.—Sixty day's time, or two per cent. discount if remitted within ten days from date of invoice. Prices subject to changes in market without further notice.

LENGTH OF NAILS.

2d, 1 inch; 3d, 1¼ inch; 4d, 1½ inch; 5d, 1¾ inch; 6d, 2 inch; 7d, 2¼ inch; 8d, 2½ inch; 9d, 2¾ inch; 10d, 3 inch; 12d, 3¼ inch; 16d, 3½ inch; 20d, 4 inch; 30d, 4½ inch; 40d, 5 inch; 50d, 5½ inch; 60d, 6 inch.

BOSTON.

Corrected by Fuller, Dana & Fuller, 110 North St., Boston, Importers and Commission Merchants.

Tin Plates.

I. C. Charcoal	per box	@ 13 50
" Coke	"	@ 12 50
" Terne	"	@ 12 50

Metals.

Pig Tin, Bancs, gold	per lb.	37½c
" Straits, "	"	32c
" English, "	"	32c
Copper, Sheathing	"	43c
" " yellow	"	33c
Copper Bolt	"	45c
" Braziers	"	45c
" Ingot	"	37c
" Old	"	
Lead, Spanish Pig, gold	"	6¼c
" Sheet and Pipe	"	9·45c
" Old	"	6¾c
Spelter, Silesian, gold	"	7¼c
" American, "	"	6¼c
Zinc, Sheet	"	10¼c

Iron.

Sheet Iron, Russia, gold	per lb.	18c
" English	"	7c @ 7¼c
" American	"	8c
" Galvanized	"	11c @ 13c
Swedes Bar Iron, Flat, gold.	per ton,	$145 00 @ $155 00
" Shoe Shapes, "	"	160 00 @
Norway Bar Iron, Flats, "	"	145 00 @ 155 00
Norway Shapes, gold,	per ton,	160 00 @
Norway R'd, 2 in. to ¾ in. gld.	pr. ton	150 00 @
" 11-16 to ¾ in. "	"	167 50 @
" 5-16 to ¼ in. "	"	170 00 @
" Nail Rods, Roll'd "	"	187 50 @
" " U. B. "	"	175 00 @
" " Benzon "	"	170 00 @
" " Vasa, "	"	165 00 @
" " N I W "	"	162 50 @
English Refined Bar Iron,	"	105 00 @
Scotch Pig Iron,	"	58 00 @ 62 50
American "	"	45 00 @ 54 00
Wrought Scrap Iron,	"	57 50 @ 60 00

Steel.

English Tool Steel, gold	per lb.	16c.
" Machinery Steel, gold	"	10c.
American Tool "	"	16c.
" Machinery "	"	11c
Bessemer Steel	"	8¾ @ 9¼c
German "	per lb.	10½c.
Spring Steel	"	9c.
Tire "	"	8c.
Sleigh Shoe Steel	"	6¾c.
Toe Calk "	"	8¾c.

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

March 8, 1873.

Axes, Chopping—Blood's $12 50@14 50
Augers—C. S. cut dis 30%
Bits, Auger—Pierce's 25%
" Jennings' dis 10%
Bells, Cow—Yaw's Genuine 20%
Bells, Hand dis 50&10@55&10%
Bellows—Smiths' dis 15@20%
" Moulders' dis 10%
Bolts—Carriage and Tire, dia. neck dis 60&10%
Braces, Bit—Barber's dis 30&10%
Spofford's Patent dis 37½%
Brads, Cut dis 50&7½%
Boards—Stove, Brooks' Patent, new list dis 30%
Buckets—Well per doz $6 00
Butts—Brass dis 25%
Cast Loose Joint dis 40%
" " Pin dis 30%
" " Japanned dis 30%
" " Silver Tipped dis 20%
Wrought Narrow dis 10%
" Broad, Loose Joint dis 15%
" Table and Back Flaps net
Belting—Rubber dis 37½@33⅓%
Leather, new list, dis 33@30&5%
Beaters, Egg, "Peerless" per doz $4 00@4 50
Brick—Bath (box of 2 doz) Best English $1 50
" Rutherford" $1 25
Bung Borers—"Enterprise" dis 10&10%
Chalk—White, Carpenter's per gross, 50c
Red, Carpenter's 75c
Blue, Carpenter's 85c
Crayon School 14c
Chisels—Firmer Socket dis 50&20@50, 20&5%
Framing Socket dis 50&20@50, 20&5%
Corner Socket dis 50&20@50, 20&5%
Slick's Carpenters' dis 50&20@50, 20&5%
Castings—Malleable ₱ lb, 10¼c
Cutters, Meat—Hale's Patent dis 10%
Cherry Seeders per doz $9 00
Elbows—Corrugated 5 5½ 6 7
Charcoal $4·25 5·25 5·25 6·50 } dis 10%
Russia 10·00 13 00 13·00 14·00
Faucets—Wood, Cork Lined dis 50@50&10%
Files—Wheeler, Madden & Clemson's dis 42½%
Freezers, Ice Cream—"Champion" dis 33⅓%
Gates—Molasses—
Patent Self-Measuring... ₱ doz. $43 00; dis 10&10%
Hinges—Window Blind— dis 30%
Shepard's Standard, and Clark's dis 30%
Wrought Strap and T dis 15%
Hods, Coal—Plain, Black and Galvanized, new list net
Funnel, Black and Galvanized new list net
Fancy and Helmet, new list net
Hammers—Maydole's net
Yerkes & Plumb's dis 5@10%
Hatchets—Blood's net @ 5%
Hooks and Staples—Wrought 50&10@60%
Hooks—Belt dis 45&10%
Hasps and Staples—Wrought dis 50&10@60%
Planes, Bench dis 15%
Sad Irons ₱ lb 5¾c
Kettles—Brass ₱ lb, 52½c
Enameled dis 50%
Knives, Drawing—Oval No. 1 dis 50&20@50, 20&5%
Razor Blade dis 37½&20@37½, 20&5%
Lanterns "Peerless" No. 1 5 10
₱ doz $26 00 $12 50 $15 00 dis 10%
"Radiant" 75 100 150 175
₱ doz $13·13 13·13 22·50 22·50 dis 20%
Knobs—Door dis 25%
Locks—Door dis 25%
Machines—Apple Paring, Turn Table, Lightning $8 50 ₱ doz
Tinmen's "
Doweling, Merchant's, No. 1 " 4 75
" " No. 2 " 5 00
Mills, Coffee—Box and Slide, common dis 10&5%
Box Union and Eagle dis 10%
Swift's Patent dis 10%
"Champion" dis 10&10%
Nails—Cut, Chesapeake $5 00 rates
Clout and Finishing dis 7½%
Shoe dis 7½%
Horse, Ausable No. 5 6 7 8 9 10
30 27 25 24 23 22c
" " 1000 lbs dis 5%
" Clinton No. 6 7 8 9 10
23 21 20 19 18c
Packing—Rubber dis 30@33⅓%
Pencils, Slate—Soapstone 4 5 6 in.
3040 50c. per 100
Case lots dis 20%
Paint—White Lead, U. S. Gov't ₱ lb 9½c
Rivets—Iron, Black and Tinned dis 20%
Copper dis 10%
Rope—Manila, ½ inch and larger ₱ lb 17½c
Rules—Boxwood and Ivory, Stephens dis 50&10%
Staples—Blind, Boardman's Pat., ½ & ⅝ ₱ lb 37c
Skates—White's dis 20%
Straps, Skate—Russet and Black net @ 20%
Spoons—Iron Tinned dis 10%
" " by the case dis 20%
Plated Rogers' A No. 1 dis 25&5%
Squares—Steel and Iron new list 50%
Shoes, Horse—H. Burden & Sons ₱ keg $6 57½
Shovels & Spades—Shepard, Forsyth & Dennison 12½%
Saws—Henry Disston & Sons dis 5%
Scales—Buffalo Scale Works dis 25%
Fairbanks dis 15%
Screws—National Screw Co. Iron dis 50%
" Brass dis 40%
Shears—Sevmour's dis 50%
Tools—Tinmen's dis 17½%
Traps, Steel—Newhouse dis 17½%
Tacks—Half Weight Am. Iron dis 70&7½%
Vises—Parallel, Buffalo dis 15%
Wrenches—Coes' genuine dis 30%
Coes' Imitation dis 50&10%
Tafts' Pattern dis 62½&10%
Ware—French, Tinned and Iron dis 15@20%
Stamped and Japanned net
Cast Iron Hollow dis 20@30%

METALS.

Tin Plates, Charcoal IC.

10x14	$14 50
12x12	15 00
12½x17	14 00
14x20	15 50
Add for each X	2 50
14x20 C. terne	$13 00@14 00
20x28 C. "	29 00
20x28 X. "	34 00
Pig Tin—Straits	41@42c
Banca	48@49c
Solder No. 1 34c, No. 2 22c	50 lbs. deduct ½c per 100 " " 1c
Sheet Zinc, "Lasalle," 1000	500 100 lb casks
	$11 00 $11 10 $11 30 ₱ 100 lbs
Iron Wire—Bright and annealed	dis 10@20%
Coppered	dis 5@15%
Tinned	dis 5@15%
Tinned Broom, Nos. 20 20c, 21 21c, 22 21c	dis 20%
Copper—Sheathing 14@18 oz	₱ lb 43c
Planished	₱ lb 49@51c
Bottoms	₱ lb 45c
Bolts	₱ lb 45c
Braziers' Sheets	₱ lb 45c

Sheet Iron—Smooth Finish	Com'n	Char.	Jun
Nos. 10 to 14	6·85	8·35	10·05c
Nos. 15 to 20	7·35	8·75	10·25c
Nos. 21 to 24	7·55	8·95	10·45c
Nos. 25 & 26	7·75	9·15	10·65c
No. 27	7·95	9·35	10·85c
Am. Russia		A.	B.
		15½c	13c
Gen. Russia, No. 1 stained			21c
" " " clean			22c
Galvanized			dis 20%

CHICAGO.

Reported by Markley, Alling & Co., Dec. 1872.

AGRICULTURAL IMPLEMENTS.

Scythes.—Dunn Edge Tool Co dis 25%
Hay and Manure Forks.—Otsego extra C. S. dis 25%
Hoes & Garden Rakes.—Jackson and Otsego dis 25%
Scythe Stones dis 25%
Scythe and Bush Snathes dis 20%
Harvest Rakes and Barley Forks dis 20%
Revolving Horse Rakes dis 20%
Handles.—Fork and Shovel dis 20%
Cradles.—Nithington, Coo'ey & Co dis 20%
" Genuine Morgan ₱ doz net $36 00%

AUGERS AND BITS.

Ives', extra C. S dis 20%
Jenning's dis 5%
Cooks' dis 25%
Snell's dis 10%
Snell's Car Bits dis 10%

AXES.

Amoskeag Yankee ₱ doz $13 50
" Crescent " 14 00
Hunt's Yankee " 14 50
Kennebeck Yankee " 12 00
Lippincott " 12 50
" Crown " 13 00
" Beveled " 13 00
Jefford's Silver Steel " 13 00
Red Warrior, Beveled " 14 00
Kennebeck, Handled " 15 00
Boy's, Handled " 12 00

BOLTS.

Carriage and Tire dis 50&20%
Cast Barrel and Shutter dis 20&10%
Wrought Iron Barrel add 10%
" " Square net list

BUTTS.

Cast Fast Joint, Narrow dis 10%
" " Broad dis 20%
" Loose Joint dis 35%
" " Pin, Reversible dis 25%
" " Japanned dis 25%
" " Silver Tipped dis 25%
Wrought Narrow, Fast Joint net list
" Broad, Fast Joint dis 15%
" Loose Joint dis 15%
" Loose Pin dis 15%
" Table net list
" Brass dis 15%
Garretson's Blind Butts, Wood doz sets $2 00
" " " Brick doz sets 3 00
Parker's " " Wood doz sets 2 25
" " " Brick doz sets 3 25

CASTERS.

Iron Plate dis 20%
Brass Wheel Plate dis 20%
Porcelain Wheel Plate dis 20%
" " Bed dis 20%
Iron Wheel Bed dis 20%

CHISELS.

Butcher's Tanged Firmer dis 30%
" Long Paring dis 30%
Witherby Socket Framing dis 50&15%
" " Firmer dis 50&15%
" " Corner dis 50&15%
" " Slicks dis 50&15%

COFFEE MILLS.

Box	4 Iron	$ 3 75
"	103 "	5 25
"	102 "	7 50
"	107 Britannia	7 50
"	106 "	9 25
"	25 Union	11 00
"	35 "	13 00
"	75 Cast Steel	11 00
"	85 "	13 00
Side	50	4 75
"	60	5 75
"	70	7 25
"	90	18 00
"	15 Union	7 00
"	20 "	8 00

CUTLERY.

American Table dis 20%
" Pocket dis 25%

DOOR SPRINGS.

Torry ₱ doz $7 50
Rubber " 4 00
Boon's " 5 00

DRAWING KNIVES.

Witherby Tool Co dis 50&15%
Ohio Tool Co net list

FILES.

Butcher's $7 00 £
Nicholson's $5 00@$5 50 £

HAMMERS.

Maydole's net list
Yerks & Plumb net list
Cheney net list

HANDLES.

Extra Axe ₱ doz $3 00
No. 1 Axe " 2 25
No. 2 Axe " 2 00
R. R. Pick, No. 1 " 2 00
Coal " " " 2 00
Sledge, No. 1 " 3 00
Hatchet " 54
Hammer, A. E " 55

HATCHES.

Amoskeag Shingling, No. 1 ₱ doz $7 25
" No. 2 " 8 00
" No. 3 " 8 75
" Claw, No. 1 " 7 75
" " No. 2 " 8 50
" " No. 3 " 9 22
" Lath, No. 1 " 7 50
" " No. 2 " 8 25
" " Solid Steel " 12 00

HINGES.

Strap and T dis 5%
Screw Hook and Strap, 8 to 12 in. net, 10c ₱ lb
" " 14 to 24 in. net, 9c ₱ lb
Hook and Eye Hinges net 12c@16c ₱ lb
Gate, No. 35, State ₱ doz $3 50
" No. 3, In and Out " 3 50
" Blinn's Pat " 7 50

HORSE NAILS.

Northwestern, 8d 24c
Ausable, 8d 24c
Globe, 8d 26c

KETTLES.

Brass net 54%
Enameled dis 15%

LOCKS AND KNOBS.

Norwalk Lock Co dis 25%
Branford " dis 25%
Eagle " dis 15%
American Pad Locks dis 25%
Continental Lock Co dis 10%

MEAT CUTTERS.

Haven's Patent net list
Hale's " dis 10%
Woodruff " net list
Stowe's Sausage Stuffers net list

MOLASSES GATES.

Stebbin's Patent dis 40%
Enterprise " dis 5%

NAILS.

10d to 60d per keg $5 25

OIL STONES.

Washita No. 1 net 35c ₱ lb
" Slips net 65c "
Hindostan No. 1 net 9c "
" Axe net 10c "
" Slips net 15c "

PICKS AND MATTOCKS.

Picks, Railroad, Axe Finish ₱ doz, $13 50
" Coal, Axe Finish " 10 00
Mattocks, L. C., Axe Finish " 16 50
" S. C., " " 16 00
Grub Hoes, Axe Finish, No. 2 " 12 00

PLANES.

Ohio Tool Co. Bench dis 10%
Sciota dis 15%
A. Howland & Co. Bench dis 10%
" " Fancy dis 10%
Bailey Patent Iron dis 15%
Plane Irons, Butcher's dis 30%

RIVETS.

Iron dis 10@15%
Tinned dis 10@15%
Copper, No. 7 net, ₱ lb, 60c

RULES.

Stanley Rule and Level Co dis 40&10%
Hubbard & Curtiss Mfg. Co dis 40&10%

SAD IRONS.

Best A No. 1 ₱ lb, net, 5½c
" Copper Face Star " 5¼c

SANDPAPER.

Wiggin & Stevens, No. 0 to 1½ ₱ ream, net, $4 50
" " No. 2 to 3 " " 5 00

SASH LOCKS.

Champion ₱ gross, net, $12 00
Hopkins & Dickinson dis 10%
Judd's Patent dis 10%
Corbin's Patent dis 10%
Clark's " dis 20%

SAWS.

H. Disston & Sons dis 5%
Champion X Cut ₱ foot, net, 60c
M. A. & Co. X Cut " " 50c

SCREWS.

American Screw Co.—Iron dis 45&5%
" " —Brass dis 25%
" " —Blued Rd. Hea dis 25%

SHOVELS AND SPADES.

Ames' Black Shovels ₱ doz $15 00
" Polished " 16 00
" Patent " 18 00
Alling " 15 00
" " Molders' 18 00
Crane's Black " 12 00
" Polished " 13 00
Smith's " B. S. L. H. Rd. Pt. " 13 50
" " B. S. D. H. Rd. Pt. " 14 00
Ames' Black Spades " 16 50
" Polished " 17 50
" Patent " 18 00
Alling " 15 50
Crane's Black " 12 50
" Polish'd " 13 50

SCOOPS.

Alling Steel Polished, No. 2 ₱ doz, $14 00
" " No. 3 " 14 50
" " No. 4 " 15 00
" " No. 5 " 16 00
" " No. 6 " 17 00
" " No. 7 " 18 00
" " No. 8 " 19 00
" " No. 10 " 22 00
Crane's Polished, No. 5 " 14 00
" " No. 6 " 15 00
" " No. 7 " 16 00
" " No. 8 " 17 00
Crane's Black Coal, No. 4 " 18 00
" " No. 5 " 18 50
Preston, Black Scoops No. 1 ₱ doz $12 00
" " " " 2 " 12 50
" " " " 3 " 13 00
" Half Pol. Scoops No. 1 " 13 00
" " " " 2 " 13 50
" " " " 3 " 14 00
Lippincott, Half Pol. No. 2 " 16 00
" " " 3 " 17 00

WRENCHES.

Taft's dis 60%
Coe's Imitation dis 45%
Coe's Genuine dis 25%

WRINGERS.

Novelty Clothes Wringer ₱ doz $72 00
Universal " " 72 00
Mead's " 55 00

Iron. (Pittsburgh classifications.)

Flat Bars ₱ lb 5·0@5·2
Heavy Bands 5·4@6·0
Light Bands 5·8@6·0
Hoops 6·1@9·3
Rounds & Squares 4·8@8·4
Ovals 5·0@6·4
Half Ovals & Half Rounds 5·7@8·4
Horse Shoe 6·5

SHEETS.

No. 10 to 14 6·6
No. 15 to 20 6·8
No. 21 to 24 7·0
No. 25 to 26 7·

Steel.

THREE 1st CLASS PRIZE MEDALS. CLASSES 1, 21, 22, Great Exhibition of Industry, LONDON, 1851.

MEDAL OF HONOUR, SOCIETY OF ARTS & INDUSTRY, LONDON, 1856.

1st CLASS PRIZE MEDAL, CLASS 1st UNIVERSAL EXHIBITION OF INDUSTRY PARIS, 1855.

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BEST CAST STEEL FILES, SAWS, EDGE TOOLS,
HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS,
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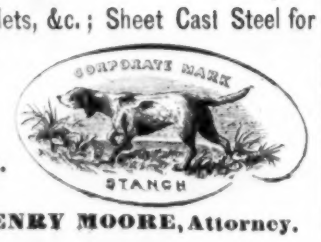
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Unsurpassed, if equaled, in quality.

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WEST STREET WORKS, } SHEFFIELD, ENGLAND.

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AND

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BOSTON, H. L. Richards, 18 Batterymarch.
PHILADELPHIA, Wm. H. Sowers.
CLEVELAND, O., Cleveland, Brown & Co.
NEW ORLEANS, Rich'd Rhodes, 71 Camp.
BALTIMORE, Md., Wm. H. Cole.
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JOHN HOGAN, Agent.

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STEEL,

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G. SANDERSON & CO.,

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Bailey Street and Broad Lane Steel Works, } SHEFFIELD, ENGLAND.

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MANUFACTURERS OF



Agricultural Steels and Irons

OF ALL KINDS AND SIZES. BEVELED, BOLTED, FINISHED AND TEMPERED TO SUIT ALL KINDS OF SOIL.



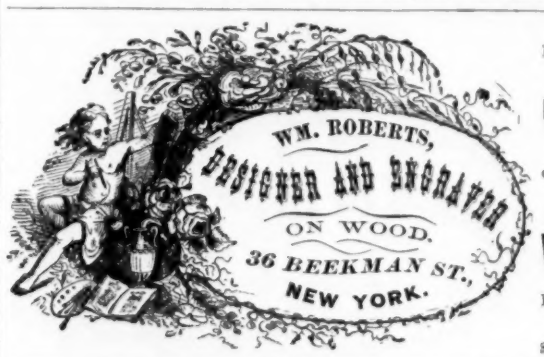
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Nellis' Grapple & Pulleys.

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A SPECIALTY.

FIRST-CLASS WORK AT LOW PRICES.

SATISFACTION GUARANTEED.

PHENIX

FIRE AND MARINE INSURANCE CO.,

Brooklyn, N. Y.

Principal Office, No. 173 Broadway.

Cash Capital	$1,000,000·00
Net Cash Assets	$1,862,000·00

BIRMINGHAM, ENGLAND

SAMUEL A. GODDARD & CO.,

Commission Merchants and General Agents,

execute orders for British manufactures on the lowest terms, and collect and forward goods for a very moderate payment. Agents for the sale of North Staffordshire Iron of a standard quality.

Steel.

Sheffield Steel Works.

(Established in 1848.)

SINGER, NIMICK & CO.

Pittsburgh, Pa.,

Manufacturers of Extra Quality Tool

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of Cast and German

Spring and Plow Steel,

Elliptic and Side Springs, Seat Springs,

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators,

Reaper Bars, Crow Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

ISAAC JENKS,

Minerva Iron & Steel Works,

Wolverhampton, England,

MANUFACTURER OF

"Jenks' Spring Steel," and Cast Spring Steel,

Also, TIRE, TOE CORK, SLEIGH SHOE, BLISTER AND PLOW STEEL.

VAN WART & McCOY,

SOLE AGENTS,

43 Chambers St., New York.

A full assortment of "Jenks' Spring Steel," in stock.

MILLER, BARR & PARKIN,

Crescent Steel Works,

PITTSBURGH, PA.,

Manufacturers of all descriptions of

STEEL

EQUAL TO ANY IN THE MARKET.

Office.....339 Liberty St.,

PITTSBURGH, PA.

Gunpowder.

GUNPOWDER.

DUPONT'S

Sporting, Shipping, and Mining

POWDER.

DUPONT'S GUNPOWDER MILLS,

ESTABLISHED IN 1801,

Have maintained their great reputation for 70 years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle and Diamond Grain Powder.

Also, SPORTING, MINING, SHIPPING, AND BLASTING POWDER

of all kinds and descriptions.

For sale in all parts of the country. Represented by

F. L. KNEELAND,

70 Wall Street, NEW YORK.

GUN-POWDER

LAFLIN & RAND POWDER CO.,

21 Park Row, New York,

invite the attention of the the Hardware Trade to their facilities for delivering

BLASTING, MINING and RIFLE

POWDER

IN EVERY PART OF THE UNITED STATES, from having agencies and magazines at all prominent points, beside our works at

Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale, and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands Rifle Powder:

Orange Rifle, Orange Ducking
Lightning, Audubon.

SAFETY-FUSE at wholesale.

Steel.

HUSSEY, WELLS & CO.

MANUFACTURERS OF ALL DESCRIPTIONS OF

CAST STEEL,

INCLUDING

Best Refined Steel for Edge Tools.

PARTICULAR ATTENTION PAID TO THE MANUFACTURE OF STEEL FOR

Railroad Supplies, Homogeneous Plates

FOR LOCOMOTIVES, BOILERS AND FIRE BOXES,

Smoke-Stack Steel, Cast Steel Forgings for Crank Pins, Car Axles, &c.

ALSO, MANUFACTURERS OF THE CELEBRATED BRAND

"Hussey, Wells & Co. Cast Spring Steel,"

For Elliptic Springs for Railroad Cars & Locomotives.

PENN AND SEVENTEENTH STS., PITTSBURGH, PA.

BRANCH OFFICES:

30 Gold St., New York. 139 & 141 Federal St., Boston. 88 Michigan Ave., Chicago.

Pittsburgh Steel Works

ESTABLISHED IN 1845.

ANDERSON & WOODS,

MANUFACTURERS OF

BEST REFINED CAST STEEL,

Cast and German Plow and Spring Steel,

FIRST AVE., AND ROSS ST., PITTSBURGH.

BRANCH HOUSES:

Nos. 74 and 75 North Street, Boston. C. H. WHITNEY & SON, 142 Greenwich Street, New York.
W. F. POTTS, SON & CO., 125 Market Street, Philadelphia.

First Prize awarded at Fair of American Institute, 1870.

CHROME STEEL COMPANY,

MANUFACTURERS OF BEST

CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN—FOR EVERY PURPOSE.

Works and Offices—Kent Avenue and Keap Street, Brooklyn, E. D.

W. W. W. WOOD, President. C. P. HAUGHIAN, Superintendent.

JOHN A. GRISWOLD & CO.,

Troy, N. Y.

J. A. GRISWOLD. E. CORNING. E. CORNING, Jr. C. GRISWOLD.

PROPRIETORS OF THE

Rensselaer Iron Works, Fort Edward Blast Furnace,
Bessemer Steel Works, And Columbia Blast Furnace.

MANUFACTURERS OF

Pig Iron, Railroad Iron, Merchant and Ship Iron,

BESSEMER STEEL RAILS, AXLES, TIRES, SHAFTING,

PLATES AND STEEL FORGINGS OF ALL DESCRIPTIONS.

New Jersey Steel and Iron Company.

Trenton, N. J.,

Represented by COOPER, HEWITT & CO., 17 Burling Slip, New York,

MAKERS OF

ROLLED IRON BEAMS.

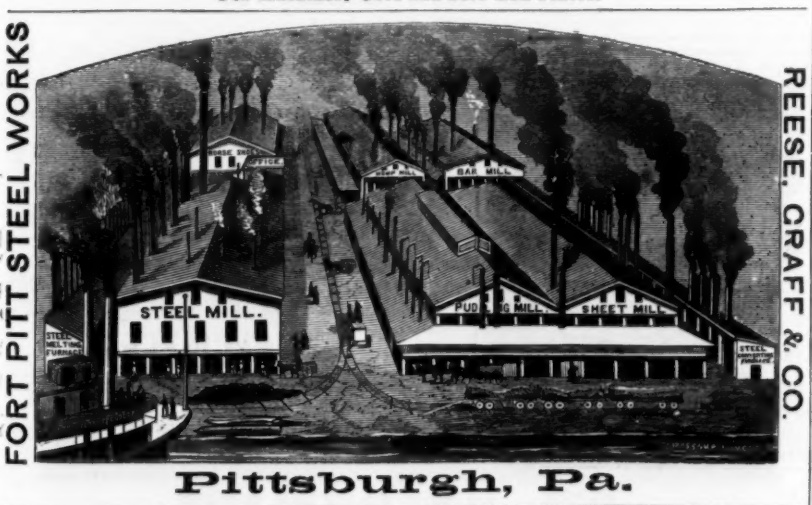
Channel Bars, the Trenton Steel Top Rails, &c., &c. Refined Iron, Brazier and Wire Rods.

ALSO,

THE MARTIN STEEL,

For Machinery Uses and Fire-Box Plates.

FORT PITT STEEL WORKS



REESE, CRAFF & CO.

Pittsburgh, Pa.

DESIGNING AND ENGRAVING ON WOOD
52 JOHN ST. H. R. WHITE NEW YORK.

Chicago Metal Market.

(Reported by Cragin Bros. & Co., 141, 143, and 145 Lake street.)

CHICAGO, Feb. 25, 1873.

Tin Plate.

IC, 10x14, Coke	$13 50	IXX, 14x20, Charcoal	21 50
IC, 10x14, Charcoal	14 50	IXXX, 14x20, "	24 50
IX, 10x14, "	17 50	IXXXX, 14x20, "	27 50
IC, 12x12, Coke		IX, 14x14, "	29 00
IC, 12x12, Charcoal	15 00	DC, 100 Plate, "	14 50
IX, 12x12, "	18 00	DX, "	17 50
IC, 14x20, Coke	14 00	DXX, "	20 50
IC, 14x20, Charcoal	15 50	DXXX, "	23 50
IX, 14x20, "	18 50		
IC, 14x20, Coke Roofing			14 00
IC, 14x20, Charcoal Roofing			17 00
IX, 14x20, "			20 50
IC, 20x28, "			29 50
IX, 20x28, "			34 50

Pig Tin.

Large, 60 ℔	40c	Bar Tin	42c
Small, 30 ℔	41c		

Zinc.

In casks 1000 ℔s	10½c	In sheets	11c
" 500 "	10¾c	Slab	9c

Copper.

Copper Bottoms	45c
Sheathing Copper	43c
Planished Copper, 14x48	51c
Size, 14x52, 14x56, 14x60	
Nos. 7 8 9	Planished Copper 53c

Braziers' Sheets, 30x60.

6 to 8 lbs	51c	Ingot Copper	
10 and 12 lbs	48c	Bolt "	50c
15 to 100 lbs	45c		

Solder.

Fine, C. B. & Co.'s B'nd.	25c	Plumbers' Solder, No. 1	23c
Ordinary	23c	" " No. 2	21c

Babbit Metal 15c. @ 25c.
Galvanized Iron Conductor Pipe ℔ 10c

Sheet Iron.

	Common.	Smooth.	Charcoal.
No. 14 to 24	7 c	7¾c	9½c
25 & 26	7¼c	8 c	9½c
27	7½c	8¼c	9¾c

Add ¼c ℔ lb for 30 in. wide.

Galvanized Iron dis 20 %

No. 16 to 20	15c	No. 27	18c
21 to 24	16c	28	20c
25 & 26	17c		

Russia Iron.
Perfect, all numbers 30c
In Sheets, 1c. higher.

Braziers' Rods.
¼ in., 10 ft. long ℔ lb, 8c | 3-16 in., 10 ft. long ℔ lb, 10c

Lead.

Pig	8½c	Lead Pipe, when cut	11¾c
Bar	10c	Sheet Lead	11c
Lead Pipe, in full coils	11c		

CINCINNATI.

Reported by Sellers & Co., Importers and Jobbers of Metals, No. 214, 216 and 218 Main street.

Tin Plate.

I. C. 10x14 Charcoal	$14·00 @ $15·00
I. C. 10x14 best Coke	13·50 @ 14·50
I. C. Terne, 14-20	12·50 @ 14·00
I. C. " 20-28	28·50 @ 29·50
I. C. Continuous	27·00

Pig Tin.

Banca	none in town	English	41c
Straits	40c		

Solder.

S. & Co.	℔ lb 27c	Roofing	℔ lb 24c
A 1	" 25c		

Lead.
Pig ℔ lb 7½c @ 8c. | Bar ℔ lb 8½c @ 9c

Copper.

Ingot	none in town	Brazier, 6 to 9 lb	℔ lb 51c
Planished	℔ lb 51c @ 54c	" 10 to 14 lb	" 48c
Sheathing	" 46c @ 48c	" 14 to 100 lb	" 45c
Bolt	" 45c	Copper Bottoms	" 48c

Zinc.
Cask, 500 to 1000 lbs ℔ lb 11¾c @ 11¾c
Case, 100 lbs " 11¾c @ 12c
Slab " 7¾c @ 9c

Brass.

Roll, No. 6 to 30	℔ lb 45c	Wire, No. 0 to 20	℔ lb 50c
" 30 to 38	" 50c	" 20 to 25	" 60c
" 38 to 40	" 65c		

Babbit Metal.

Sellew & Co.	℔ lb 35c	Market	℔ lb 15c
Black Lead	" 25c		

Antimony ℔ lb 22c
Bismuth ℔ lb $6 00
Nickel ℔ lb $3 00

Sheet Iron.
Russia ℔ lb 19 @ 23c | Am Russia A ℔ lb 14 @ 15c; " " B " 13 @ 14c

	Com. B.	Smooth Fin. S. L. U.	Smooth D. Re'fd.
18 to 20	6·9c	7·5c	8·5c
22 to 24	6·5c	7·8c	9·0c
26	6·8c	8·0c	9·2c
27	7·0c	8·2c	9·4c
30	8·2c		

Galvanized Iron—Full bundles, dis 15 @ 20 %.

Nos. 18 to 20	15c	No. 27	18c
22 to 24	16c	28	20c
25 to 26	17c		

Bar Steel, Silver, ℔ lb 22c; Crescent, 17¼ @ 18c.
Iron Wire, discount, 10 @ 15 %.
Enameled Ware, discount, 15 @ 20 %.

One Piece Corrugated Elbows.

Charcoal Iron.	℔ doz.	Russia Iron.	℔ doz.
4½ inch	$3·75	4½ inch	$8·00
5 "	4·25	5 "	10·00
5½ "	5·25	5½ "	13·00
6 "	5·25	6 "	13·00
7 "	6·50	7 "	14·00

Leader Elbows—Flat Crimp Retinned.

	℔ doz.		℔ doz.
2-inch	$2 00	2½-inch	$2 25
3-inch	2 50	3½-inch	3 00
4-inch	3 50	4½-inch	4 00

Sheet Iron Bread Pans, ℔ lb 12½ @ 13c.
American Broilers, ℔ doz, $12 @ $15.
Tinmen's Machines, net list, add 5 %.
Sad Irons, ℔ lb, 5½c. @ 5¾c.
Brass Kettles, Ansonia, 53c. @ 54c.; L. & G., 50c.
Wrought Iron Pipe dis 45 %

Inside Diameter, Inches	⅛	¼	⅜	½	¾	1	1¼
Price, ℔ foot	·12	·12	·14	·15	·25	·31	·48
Weights of Pipe, ℔ foot	·24	·42	·56	·85	1·12	1·67	2·25
Inside Diameter, Inches	1½	2	2½	3	3½	4	
Price, ℔ foot	·60	·85	1·25	1·75	2·10	2·75	
Weights of Pipe, ℔ foot	2·69	3·66	5·77	7·54	9·05	10·72	

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Anvils.
Armitage ℔ lb, gold, 13c
Peter Wright's " 13½c
Wilkinson's " 12½c

Apple Parers.
Conqueror ℔ doz, $8 50
Lightning " 8 50
Turn Table " 8 50

Augers and Bits.
Cook's dis 25 %
Ives' dis 20 %
Jennings' dis 5 %
Snell's dis 10 %

Axes.
Hunt's ℔ doz $14 00 @ 15 00
Lippincott's " 13 50 @ 14 50
Lippincott's Pioneer " 14 00 @ 15 00
Simmons' " 13 50 @ 14 50

Axles.
Kritch & Crane Mfg. Co.'s—
Patent Taper Axles dis 5 %
Swelled Taper Axles dis 5 %
Concord Axles dis 5 %
Red Jacket Axles dis 5 %
Common Axles, 1¼ inch and upward ℔ lb, 9 c
" " less than 1¼ inch " 9½c

Bells.
Troy, Church ℔ lb, 55c
Light Brass, Hand dis 50 %
Moore's, Cow dis 20 %

Bolts.
Arms, Bell & Co.'s Machine dis 10 %
" " " Carriage and Tire dis 60&5 %
Norway Iron Carriage and Tire dis 45&5 %
Cast Iron Barrel, Shutter, &c dis 30 %

Cast Butt Hinges.
Narrow Fast Joint dis 15 %
Broad " " dis 30 %
" Loose " dis 40 %
Reversible dis 40 % off list
" Japanned and Silver Tipped dis 40 % "
Loose Joint "Acorn" " " dis 35 % "
" " Japanned dis 30 % "
Excelsior Reversible Blind dis 25&5 %
Lull & Porter's Blind dis 25&5 %

Wrought Butts.
Narrow dis 10 % off list
Reversible dis 15 %
Broad dis 15 %
Table Hinges net list
Back Flaps net list
Inside Blind Hinges net list

Casters.
Porcelain Wheel Bed or Plate revised list dis 10 %
Iron or Brass " "

Chain.

English Coil	3-16	¼	5-16	⅜	7-16	½ in.	
	15	12½	11¾	11	10½	10c	gold
Trace				6½-10-2		75c	"
					7-10-2	80c	"
German Coil and Halter						new list add 25 %	"

Chisels.
Socket, Firmer or Framing dis 55 %

Clothes Wringers.
Colby's ℔ doz $66 00
Novelty " 72 00
Universal " 72 00
Monitor " 72 00

Coffee Mills.
Parker's net list
P. S. & W. Co.'s dis 5 %

Corn Knives.
Dunn Edge Tool Co.'s Clipper ℔ doz $5 75
Disston's " 5 75

Crow Bars.
Steel Pointed ℔ lb 8 @ 10c
Solid Cast Steel " 20c

Cutlery.
J. Russell & Co.'s
Lamson, Goodnow & Co.'s } new list, dis 15 %
Landers, Frary & Clark's

Files and Rasps.
Nicholson's Mill Files $5 50 to the £, currency
Nicholson's Other Files 5 00 to the £, currency
Butcher's Files 7 00 to the £, currency
Heller's Horse Rasps $10 00 to the £, currency, dis 40 %

Forks and Hoes.
Auburn Mfg. Co.'s Hay and Manure Forks dis 25 %
" " Handled Hoes dis 30 %
" " Planter Eye Hoes add 15 %
Winsted's Planter Eye Hoes add 15 %

Hammers.
Yerkes & Plumb new list net
Masons' Hammers ℔ lb 20c
Smith Hand Hammers " 22c

Handles.

Axe	Extra. $2·75	No. 1. $2·25	No. 2. $1·75	No. 3. $1·00
Pick	Extra. $2·50	No. 1. $2·00	No. 1½. $1·75	No. 2. $1·25

Smith & Montross Fork, Hoe and Rake dis 10 %
" " Broom and Mop $12 @ $18 ℔ M.

Harrow Teeth.
1 inch iron ℔ lb 6c
⅞ and ¾ inch iron " 6c
⅝ inch iron " 6½c
Barbed or Headed ½c extra

Hatchets.
Hunt's add 5 %
Simmons' dis 5 %

Hay Knives.
Lighting ℔ doz $24 00
Dunn Edge Tool Co.'s ℔ doz $14 50—dis 10 %
Fisher's " 16 50—dis 10 %

Hinges.
Strap and T—St. Louis make dis 10 % off list

Horse Nails.
Eureka 23c rates
Ausable 22c "
Northwestern 22c "
Eagle 19c "
Globe 25c "

Horse Shoes.
Rhode Island (Perkin's pattern) ℔ keg $7 00
Burden's " 7 00
Mule Shoes $1 00 extra
Rhode Island Trotting Shoes 2 50 "

Locks and Latches.
Jones & Nimick s dis 20 %
Moorhead, Adams & Co dis 20 %
Norwalk Lock Co.'s revised list dis 20 %

Mattocks and Grub Hoes.
Klein, Logan & Co.'s Mattocks ℔ doz. $14 25 @ 15 75
" Grub Hoes, Oval Eye ℔ doz. 11 00 @ 12 50

Nails.
Wheeling $5 15 rates.

Picks.
Klein, Logan & Co.'s R. R. and Clay ℔ doz. $12 00
" " Coal " 9 75
" " Poll " 12 00
" " Stone " 16 50
" " Tamping " 19 00

Planes.
Ohio Tool Co.'s net list
Eastern dis 5 %

Sad Irons.
Monitor Brand, Silver Polished ℔ lb 6c

Sash Weights.
Standard Solid Eyes ℔ lb 3½c

Saws.
Disston's dis 5 %
Spear & Jackson's $5 00 to £ gold
Hubbard, Lippincott, B. & Co.'s dis 10 %
Branch, Crooks & Co.'s dis 10 %
Livingston's Patent Buck net list

Screws.
American Screw Co.'s revised list dis 45 %
$2000 worth in 6 months 2½ % extra

Scythes.
Blood's C. S. & G. S. net list
Dunn's Edge Tool Co.'s net list
Paris Furnace Co.'s dis 20 %
Waldron's English $9 00 to £

Scythe Sotnes.
No. 1 Indian Pond ℔ gross, $ 7 00
Extra " " " 7 50
Premium " " 9 50 } dis 25 %
Diamond Grit " 13 50

Shovels, Spades and Scoops.
Ames' add $1 00 to list
Lippincott's new list net
Rowland's, Maxwell revised list

Sledges.
Smith's Stone or Coal Sledges—
Steel Face Polished ℔ lb, 17c
Solid Cast Steel " 35c
Striking Sledges ℔ lb extra, 1c

Snaths and Cradles dis 20 %

Springs.
Cleveland Spring Co.'s—
Carriage and Express net list
Blue Seat Springs dis 20 %

Tacks.
Norway Tack Co.'s ½ weight dis 70 %
Brads dis 50 %

Traps.
Newhouse Patent dis 12½ %
Reichard's Animal, Wood Bottom ℔ doz $10 00
" Metal Bottom " 12 00

Vises.
Solid Box ℔ lb 18c
Wilson Mfg. Co.'s dis 15 %

Wrenches.
Coes' Genuine dis 25 %
" Pattern dis 40 %
Taft's dis 50 %

London Metal Market.

(From The Mining Journal.)

	£.	s.	d.	£.	s.	d.
Copper—℔ ton.						
Best Selected	95	0	0	98	0	0
Tough Cake & Tile	92	0	0	96	0	0
Sheathing and Sheets	96	0	0	100	0	0
Bolts	102	0	0	103	0	0
Bottoms	103	0	0		—	
Old (Exchange)	84	0	0		—	
Burra Burra	90	0	0	91	—	
Wire ℔ lb.	0	1	1¼		—	
Tubes "	0	1	0½	0	1	1
Brass—℔ lb.						
Sheets	0	0	10	0	0	10½
Wire	0	0	10¼		—	
Tubes	0	0	11¼	0	0	11½
Yellow Metal Sheathing	0	0	8½	0	0	9
Sheets	0	0	8¾	0	0	9
Tin—℔ ton.						
English Blocks	146	0	0		—	
Ditto Bars	147	0	0		—	
Ditto Refined	149	0	0		—	
Banca	147	0	0		—	
Straits	143	0	0		—	
***Tin Plates**—† ℔ box.						
IC Charcoal 1 qual.	2	1	0	2	2	0
IX " 1 qual.	2	7	0	2	8	0
IC " 2 qual.	1	18	0	2	1	0
IX " 2 qual.	2	4	6	2	7	0
IC Coke	1	15	6	1	16	0
IX "	2	1	6	2	2	0
Canada Plates ℔ ton.	24	0	0		—	
" at works	21	0	0	22	0	0
Spelter—℔ ton.						
Foreign	25	10	0	26	0	0
To arrive		—			—	
Zinc—℔ ton.						
In Sheets	33	0	0		—	
Iron—℔ ton.						
Bars Welsh, in London	12	0	0	12	15	0
" to arrive	13	0	0			
Nail Rods			nom.			
Nail Rods, Staff'd in L'ndon			"			
Bars	14	0	0	15	0	0
Hoops	14	17	6	15	10	0
Bars at Works	13	0	0	14	0	0
Hoops ditto	14	0	0	15	0	0
Sheets, single	18	0	0	19	0	0
Pig, No. 1, in Wales	6	0	0	7	0	0
Refined metal ditto	7	0	0	8	0	0
Bars, common, ditto	11	10	0		nom	
Do, merchant, Tyne or Tees	12	0	0		—	
Ditto, Railway, in Wales	11	0	0	11	10	0
Ditto, Swedish, in London	17	10	0	18	0	0
To arrive		—			—	
Pig, No. 1, in Clyde	6	16	0	7	5	0
Ditto, f.o.b., Tyne or Tees	4	10	0	5	10	0
Ditto, Nos. 3, 4, f.o.b.		—			—	
Railway Chairs	5	5	0	6	0	0
" Spikes	12	10	0	14	0	0
Indian Ch'coal Pigs in L'don	7	0	0	8	0	0
Steel—℔ ton.						
Swedish, in kegs (rolled)		—			—	
Ditto (hammered)	18	10	0	19	0	0
Ditto, in faggots		—			—	
English, spring	20	0	0	25	0	0
Quicksilver—℔ bottle	13	0	0		nom	
Lead—℔ ton.						
English Pig, common	22	10	0	22	15	0
Ditto, LB	22	10	0		—	
Ditto, WB	23	0	0		—	
Ditto, Sheet	23	5	0	23	10	0
Ditto, Red Lead	28	0	0		—	
Ditto, White	29	0	0	31	0	0
Ditto, Patent Shot	25	0	0	25	5	0
Spanish	22	0	0	22	5	0

* At the works, ₩, to 1s. 6d. per box less. Terne Plates 2s. per box below Tin Plates of similar brands. † Add 6s. for each X.

ANNOUNCEMENT.

Office of

London Manu'fg. Co.,

246 Grand Street, New York.

To Coach Makers, Hardware Manufacturers, Ca Builders and the Trade generally, using

Brunswick Black.

Aware of the impracticability of importing this article at a price sufficiently cheap for consumption here, we take pleasure in stating that, aided by an extended experience in England, Canada and the U. S., we are enabled to supply an article, which, upon trial, will demonstrate its being EQUAL TO ANY English made, and superior to all manufactured in America, for its quick self-drying quality, as well as for its being a durable and brilliant Black.

Brunswick Black,

No. 1. . . .$1·50 per gall. No. 2 . . . . .$1·25 per gall.

The London Manufacturing Company in submitting the

Dazzle Black Baking Japan

(and their Japans generally)

would call the attention of Sewing Machine Companies, Lock Manufacturers, Japanners and other manufacturers using or handling Japans, to its peculiar qualities, both as a preparing and finishing Japan. For the fine work of Sewing Machine Companies and Ornamental Japanners the DAZZLE BLACK BAKING JAPAN is highly desirable, because coupled with brilliancy is durability, and with them is combined the fact that it will NOT "Chip."

THE LONDON MANUFG. CO

Manufacture only

JAPANS AND BRUNSWICK BLACK,

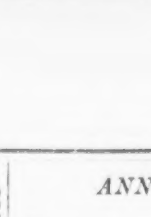
Factory, Newark, N. J. Office, 246 Grand St., N. Y



Especially adapted for the Iron and Metal Trades.

55 Beekman St., NEW YORK.

Send for Samples and Prices.



Do your own Printing with a **Novelty Printing Press,** the best yet invented for amateur and business purposes, and unsurpassed for general job printers. Over 8000 in use. **Benj. O. Woods,** Manufacturer and Dealer in every description of Printing Material, 349-351 *Federal & 152 Kneeland St's, Boston. Branch Store,* 543 *Br'dw'y & 88 Mercer St., N. Y. Agents, Kelly, Howell & Ludwig, Philadelphia, J. F. Edwards, St. Louis, Mo., A. C. Kellogg, Chicago Ill.* Send a ne forw Illustrated Pamphlet.

James M. Berry, Newmarket, N. H., Writes Nov. 25th, 1872.—I think the Novelty is the best press yet invented; I am certain that it can be worked at a much greater rate of speed and do better work than any other amateur press.

Wm. A. May, Chicago & Canada R. R. Co, Morenci, Mich., Writes Jan. 10th, 1873.—I have recently been doing some very fine work on my little Novelty, in fact, quite throwing the "regular" job offices in the shade.

T. J. Turley, Franklin, Tenn., Writes Nov. 6th, 1872.—Some months ago I purchased one of your Duodecimo Novelty Presses, and I am happy to say that it works admirably and far exceeds my most sanguine expectations in the manner it does its work.

A. S. K. Holbrook, Ogdensburg, N. Y., Writes Nov. 26, 1872.—My Novelty does work equal to that of the best offices in this city.

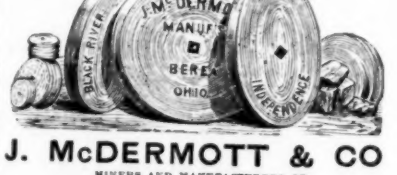
P. P. Mast & Co., Buckeye Agricultural Works Springfield, Ohio, Write July 29th, 1872.—Our Novelty Press works to our entire satisfaction.

Oscar F. Black, Vergennes, Vt., Writes Dec. 16th, 1872.—My Novelty works splendidly.

F. H. Pinkham, New Market, N. H., Writes Aug. 9th, 1872.—I like my "Novelty" better and better every day; I am surprised at the speed with which work it

J. A. Morrill, Fulton, N. Y., Writes Nov. 25th 1872.—The Duodecimo Novelty Press which I purchased about two weeks ago works splendidly; cards printed on it seem as fine as engraved.

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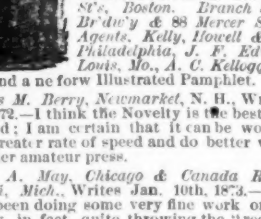
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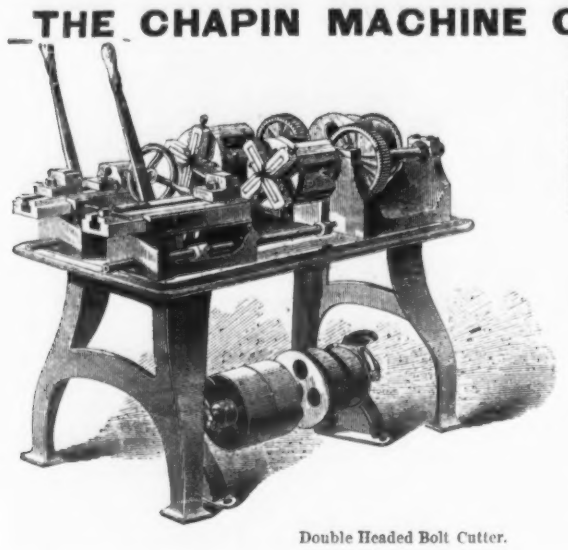
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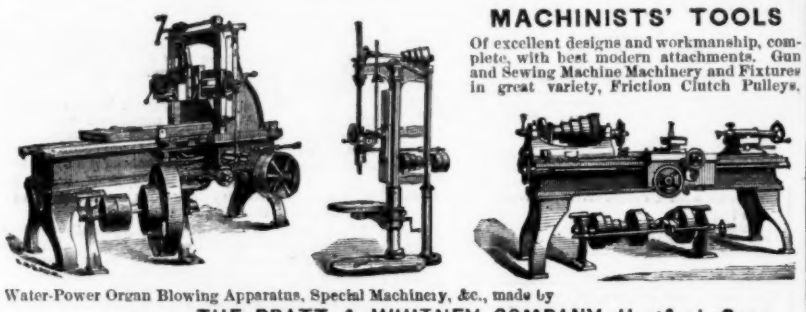
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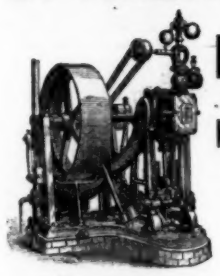
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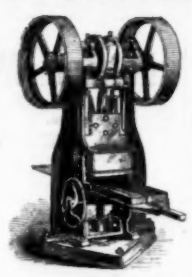
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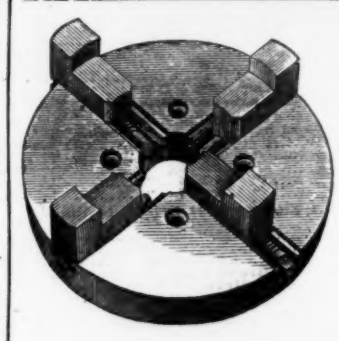
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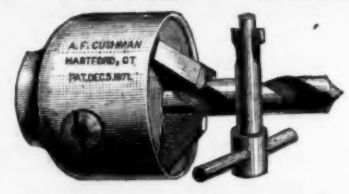
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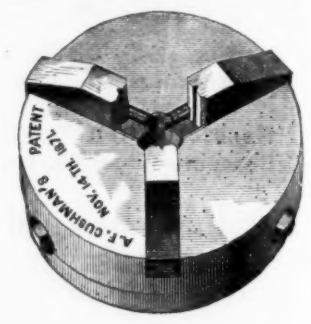
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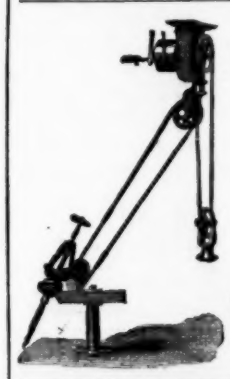




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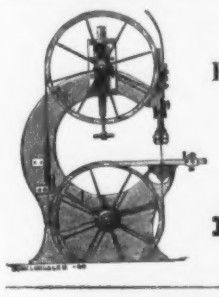
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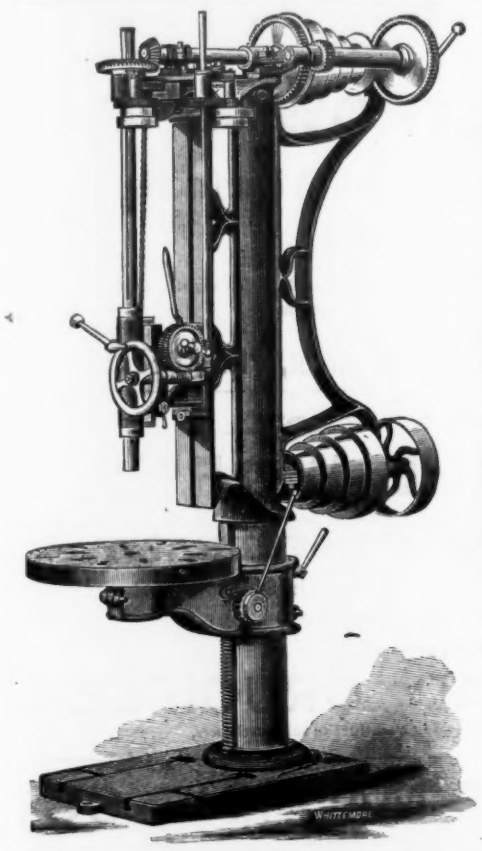
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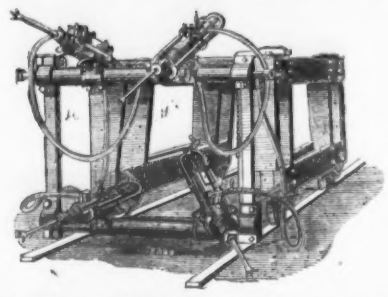
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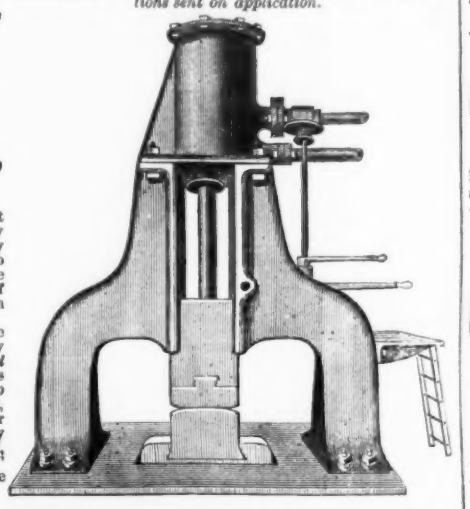
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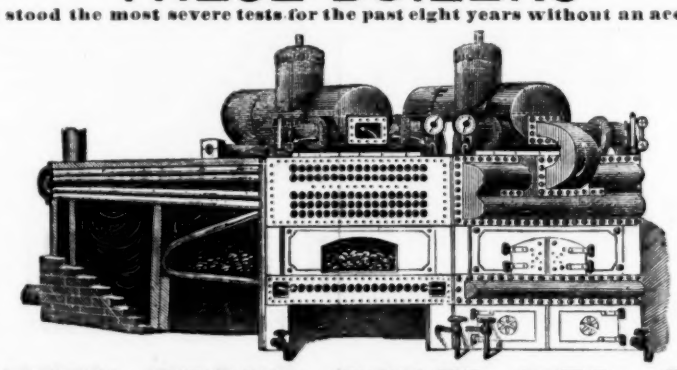


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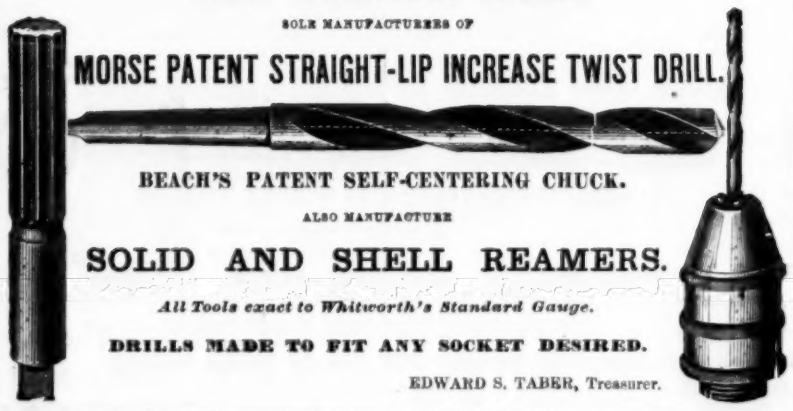
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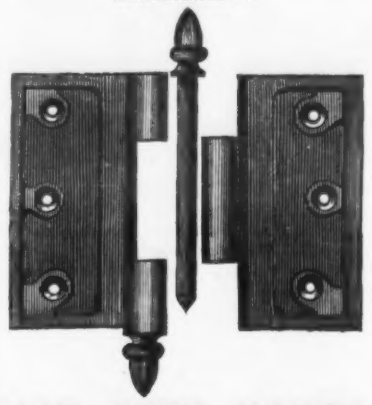
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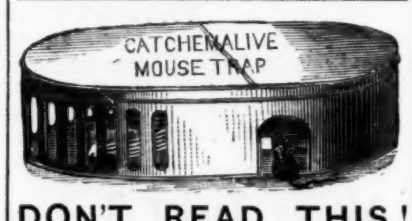
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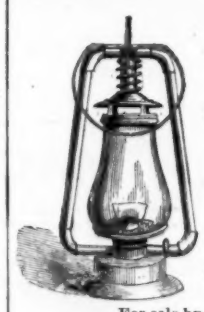
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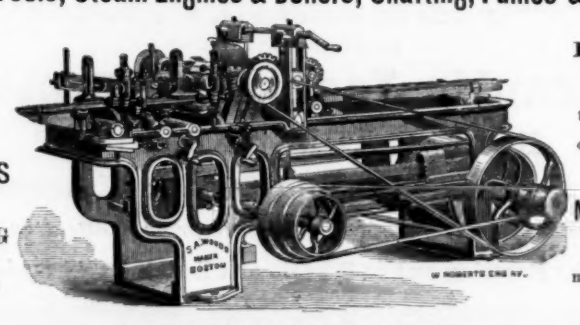
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